



FRIDAY, NOVEMBER 28.

Large Automatic Car-Gaining Machine.

The accompanying illustration represents a machine recently introduced by Messrs. J. A. Fay & Co., Cincinnati, Ohio. The machine is provided with vertical boring works, traversing cutters, and automatic feed, and is of large size, occupying an area of 10 ft. by 21 ft. on the floor. Timbers of any size to 16 in. thick by 22 in. wide can be gained at any desired angle to the depth of 4 in. and also bored. By means of the stops in front of the table, duplicates of timbers may be produced indefinitely, the stops indicating the width and distance apart of the gains. The depth of the gains is determined by the position of the spring stops in the cutter slide, which will indicate four depths of gains. The table is moved longitudinally upon friction rollers by means of a rack and pinion, operated by a hand wheel in front.

The gaining head is made expansive, and will cut double its width. Other sizes of heads can be furnished to cut up to 6 in. in width at one operation. The gaining-head with its slide has vertical movement, governed by the lever in front and counterbalanced by springs inclosed in the moving frame, and can be quickly raised or lowered without changing the position of the governing hand lever. The sliding frame, which conveys the cutter-head in its traversing movement over the table, is actuated by means of a train of gearing contained within the frame. It is automatic, and

light over a road will run a greater number of miles than an engine that has to draw an ordinary train.

GOOD RECORD.

Real Estate Records of Railroad Corporations.

NEW HAVEN, Nov. 17, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In connection with Mr. Paine's able paper in your issue of Nov. 14, on the Real Estate Records of railroad corporations the following from the writer's own experience in this line may be of interest to your readers.

About seven years ago it fell to my lot to put the right of way records of a Connecticut corporation into proper shape. In the construction of some 50 miles of road the land titles had at first been carefully searched and all documents cared for by an able attorney. At a later date, however, when funds grew scarce, verbal understandings were had with property-owners of which no written records were preserved, in accordance with which the road was in many instances constructed without settling for right of way, the farmers in many cases agreeing to give the land without compensation but never actually executing deeds therefor, and in other cases agreeing to wait until the road was better able to settle with them.

That time, however, never came. The road first passed into the hands of trustees under the second mortgage, and was finally reorganized by the first-mortgage bondholders, by whom I was employed. I at the outset found chaos reigning supreme. A large proportion of the deeds were obtained from the attorney referred to, who naturally had stopped work when he found his salary unpaid and in arrears, and hence the deeds in his custody were only a part of the whole. The second-mortgage trustees appeared to have

and a fractional number of $\frac{1}{4}$, $\frac{1}{8}$, etc., was added to distinguish them therefrom. In this way for all time such additional parcels as the company acquired would find their natural place in the established system of records.

Each parcel having a distinct title and deed was colored on the map in a different tint from the adjoining parcels, that its several boundaries might be more clearly shown. A series of abstract books were then begun in the following form: Two pages were reserved for each title number, the titles numbering forward through the books in numerical order, the first page of the space reserved for each title in each case being headed somewhat as follows:

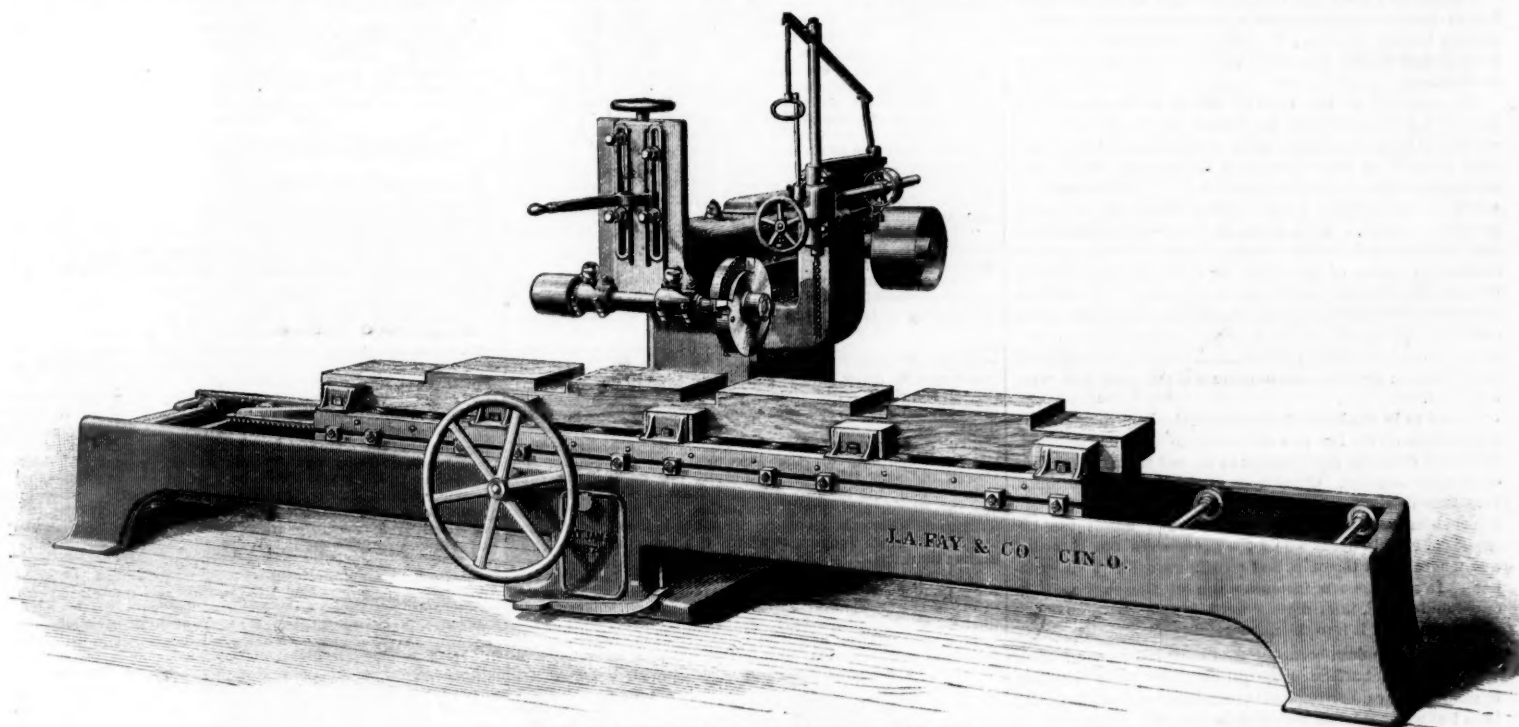
PARCEL No. 75. ROLL MAP No. 2.
Stations 437 to 443 + 47 "A" line.
Owners, John Smith et al. Quantity, acres.
Town of, County of

Then followed the abstract of the title as far as known, ending with the conveyance to the railroad company, the entries being made in the following form:

John Smith and Mary, his wife, of the town of, County of, and State of, to The X., Y. & Z. Railroad Co.	Warranty Deed, Dated Jan. 5, 1870. Acknowledged Jan. 5, 1870. Recorded Jan. 5, 1870. Town Records, Vol. 210, page 486. Consideration, \$350.
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Conveys the premises in question.

When, however, anything other than the premises as noted on the map were conveyed, it was so noted in the abstract book, and if necessary an explanatory map was inserted in an appropriate place therein. Any reservations to the owner, such as ordinary farm crossings, farm bridges or cattle passes, or the right to cut timber then growing on



LARGE AUTOMATIC CAR GAINING MACHINE.

can be stopped at any point by the stops on the side of the column.

The sliding cutter-head frame runs at a fixed speed, whether for wide or narrow timber—a peculiarity to this machine. This equal speed in either direction enables the cutting to be done both ways, the cutter-head being so constructed as to facilitate the operation. The driving counter-shaft is placed vertically over the centre of the distance of the travel of the pulley shaft in the rear end of the sliding frame. The arc of the circle struck from it being but slightly different from its chord, the tension of the belt remains nearly uniform. A spindle for vertical boring is attached to the right-hand side of the column for boring timbers and sills after the gaining has been completed; it has a vertical movement of 10 in., and also a transverse movement over the carriage of 16 in. It can be used or not, at will; is not in the way of gaining, and is an improvement in this class of machines long needed, saving not only the handling of the material, but the cost of a special boring machine, as well as the expense of another operator.

Contributions.**Good Record on a Locomotive.**

WILLIAMSPORT, Pa., Nov. 22, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A paragraph bearing the above caption, which appeared in your issue of Nov. 14, and gave some figures on the performance of engine No. 587, running between Albany and Syracuse, is not complete or correct. This engine draws train No. 39, west, and with very few exceptions has returned to Albany light, not drawing Atlantic express as reported. I would like your informant to give record of cars drawn while the engine was making the mileage reported, as it is an established fact that an engine running

taken some deeds themselves. Others at a subsequent time were taken in the name of sundry officers of the company or its trustees, who appeared to have made personal advances of funds for the purpose. And to illustrate the fate which had overtaken valuable documents in the various organizations and reorganizations, I would mention the instance of our unearthing a number of original and unrecorded deeds of right of way by sorting over an immense pile of waste paper and general rubbish which was found in the garret of one of the company's station buildings, and was just about to be sold to the rag-dealers for waste paper. These, however, were only "brands snatched from the burning," many other deeds being still missing to this day. This is no fancy sketch, and I doubt not can be matched in the experience of many others in the service.

The company possessed a good set of right-of-way maps, scale 50 ft. to the inch, on tracing cloth in a series of rolls. In size they showed all details very plainly, but they were large, cumbersome and unhandy to consult. An atlas on a reduced scale was talked of, but could not then be afforded, and the rolls were used until such time as finances should justify something better. For convenience a cabinet or closet was fitted up with a series of pegs or hooks, one above the other, on which the rolls, which were about 3 in. in diameter and 30 in. long, were placed, each roll being numbered and finding its own appropriate place on the rack.

Commencing at the west end of the main line, its initial point, numbers were assigned to each parcel of property from 1 to about 550, the parcels on the branch line of three or four miles in length being numbered from 551 onward, the numbers being placed on the right-of-way maps.

These numbers were entirely confined to right of way proper. Where additional parcels of land had been taken for depot sites, gravel pits, borrow pits, etc., etc., they were assigned the number of the adjoining parcel of right of way,

the premises, or to allow buildings, etc., to remain on the right of way at the pleasure of the company, etc., etc., whatever they were, were entered in the abstract book as they occurred in the deed, for future reference.

The deeds when thus entered were indorsed on the outside, on the top, in red ink, with the number of the parcel to which they pertained, and an envelope of stout paper bearing the corresponding title number indorsed likewise with red ink on its end or top was then prepared, and into this envelope was then placed every scrap of paper pertaining to this title which it was desired to preserve. The manner of filing these envelopes I shall explain further on.

As for the indorsement of the title number, I know of no neater way than to procure a rubber stamp bearing some such legend as this:

Land Title, No. —.
X., Y. & Z. Railroad Co.

having a space left blank in the stamp for setting up the proper number with movable rubber type, and using the stamp on both the envelope and all its contents, the neatness of the effect well repaying for the extra trouble. This system I have seen practiced on certain New York roads, where it was well liked.

Quit-claim deeds from parties having a mortgage or other interest in the property, as well as all written agreements and other deeds and documents relating or pertaining thereto, and in fact all instruments of sufficient dignity to be entitled to be recorded in town or county offices, were thus entered, indorsed and filed.

These entries should of course be made in order of time so that when finished the list of entries constitutes the abstract or chain of title by which the company holds the property. In cases, however, where abstracts have been already prepared by the attorneys searching the title, and the same are neat enough in form for preservation, and are rather

lengthy, it might be a better plan to file the same in the title envelope and make a mere skeleton reference to the abstract in the abstract book, in some such form as the following:

For Abstract, see Title Envelope.

For Chain of Title, see Land Records, Town of —, vol. 27, page 37; vol. 35, p. 624; vol. 43, p. 710, etc.

So that in case the abstract should ever be lost, it could readily be replaced from the town or county records by reference to this memoranda.

Condemnation proceedings, and all papers pertaining thereto, such as the certified copies of awards, were entered and filed in substantially the same form, and entries were made as to date of commencement of proceedings, the amount of award, date of payments, etc., etc.

It sometimes happened that one deed conveyed several distinct parcels of land, in which case the deed was entered in the abstract book under each parcel; it was filed, however, in the title envelope of the lowest number, and was indorsed with that number at the top of the folded document, but a memorandum in red ink was added indicating the numbers of the remaining titles to which it pertained, and in entering it in the abstract book under these succeeding title numbers, a marginal note or cross reference in red ink was added on the abstract book, calling attention to the number of the title envelope where the deed was to be found.

Each title envelope contained a memorandum slip of paper indorsed with the title number, on which was stated the number of the roll map and pages of the abstract and memorandum book (of which latter more anon) where the title number appeared; a reference to all documents pertaining to the property which were filed in other envelopes; and finally a list of all papers belonging in that particular title envelope, so that the loss of any document could be readily noted.

It might be a good idea to copy this list of documents at length in the abstract book as a permanent record, as many papers, letters, etc., etc., it is well to preserve in the envelope, though hardly necessary to otherwise note at length in that book.

The condition of the titles of this line was so peculiar that it was thought best to open a second set of books which for want of a better name were termed "memorandum books," as they contained memoranda of all facts ascertained with regard to unsettled titles for the entry of which in the abstract books neither space nor propriety seemed to permit. Two pages as before were reserved to each title and the entries consisted mainly of such items as referred to pages of the ledger or other account books of the original company or its trustees which seemed to indicate payments for rights of way on parcels for which no deeds could be found; also letters containing admissions of deeds given or bargains made; also written records of conversations wherein the existence of certain deeds now lost were admitted.

It used to be the habit of our Superintendent in his daily pilgrimages on the line in a quiet way to draw out information from different land-owners as he met them by chance or on other matters. Often upon asking parties how much land their deed conveyed to the company, etc., they would inform him or would in some way or other admit the existence of certain deeds where the same were not recorded and where we at the office had no other proof of their existence. In such cases a memorandum of the conversation, dated and signed, immediately went into the title envelope and an entry of it into the memorandum book.

This memorandum book also contained reference to deeds which, while not affecting the property, by their language in some way or other implied the existence of deeds that had been lost without being recorded in the town offices, for in Connecticut land records are kept by towns instead of by counties as in New York. Sometimes, for example, a land owner would deed to other parties, bounding south or east on land "heretofore conveyed by him to the X, Y. & Z. Railroad Co." The preceding examples will, however, suffice to show the nature of the entries in this latter class of books.

On the completion of this set of books a general index book was prepared, in which all references were to the numbers of the titles instead of pages of books. In this index was entered, first, the name of every individual or corporation appearing on the land maps or conveying or releasing to the railroad company; second, the names of the railroads crossed or connected with; third, the names of all town and county boundaries, station-houses, rivers and streams, and other things appearing on the land maps to which reference might be required. In each case the index contained the number of the land title on or near which the name, boundary or natural object in question would be found, and proper things to be here noted would be the number of the roll map or page of atlas, with volume and pages of the abstract and memorandum books devoted to the title in question, and perhaps the name of the town.

The method adopted for filing the little envelopes involved the use of a very handy document file, which was obtained from Washington, and which, I think, was called the Woodruff file. These files were made about 4 in. wide, 10 in. high, and of the same depth as the safe in which they were kept, and had a black walnut front with appropriate indorsements of their contents, and with a handle they could be pulled out from the safe like drawers. The sides, however, were partly cut away to afford access to papers; the back had a patent clamp, which, when closed, held the papers tightly in their smallest compass, but when unclamped fell back sufficiently to allow any envelope to be removed in a moment, and when the envelopes were placed end upwards in one of these files the indorsement was brought where it could be readily found without the neces-

sity of removing any other envelope. These files of title envelopes, together with the abstract, memorandum and index books, were kept in a fire-proof safe in the company's general office.

We found it necessary frequently to use certain of the documents in law suits, etc., and whenever a paper was called for by proper authority a receipt dated and signed by the party to whom it was delivered was taken therefrom and placed in the proper envelope, there to remain until the document for which it acted as a voucher was returned. This served at once to locate the whereabouts of all missing documents, which, when wanted, were frequently traced to the dusty pigeon-holes referred to by Mr. Paine, where otherwise they would probably have remained unrecovered to the present day.

The system here described is well adapted to a road already constructed, but the proper way is, as Mr. Paine says, to systematize things from the beginning, and the above system in that case requires some modifications. Hereafter I shall hope to say a few words as to the methods employed in the land department on a new and unconstructed road with which I am at present connected. EDWIN A. HILL.

Automatic Freight Car Couplers.

This question formed the subject of discussion at the regular monthly meeting of the Master Car-Builders' Club, held at their rooms, No. 113 Liberty street, New York, Nov. 20. The meeting was very fully attended. Mr. L. Garey, President of the Club, took the chair. The following is the substance of a letter addressed to the Club by T. B. Buchanan, of Denver, Col., and then read:

"Many railroad men assume that in order to dispense with all loose parts some other mode of coupling than with the link and pin must be adopted. This is perhaps true so far as the link is concerned, but not necessarily true as to the pin, for the latter can be, and is, in many couplers, so secured as not to be a loose part.

"The discussion of the relative merits of the link and pin as compared with other modes of coupling does not touch the question of safety to the brakeman, but turns entirely upon the question of economy, not of man, but of material, to the railroad companies. The safety of the brakeman really prompts all popular agitation of this question and the efforts to cure the evils of the present mode by legislation. Those who insist upon dispensing with all loose parts make the selection of an improved coupler turn upon a matter entirely aside from the main point to be gained by a change of couplings. They answer that they can secure both the safety of the brakeman and greater economy to the company simultaneously.

"What device, dispensing with all loose parts, offers equal protection to the brakeman as the best of those which still use a loose link?

"The only thing connected with couplers on which all master car-builders are agreed is that for many years yet brakemen will be required to couple oftener with some form of common link and pin than with an improved draw-bar. Hence the new coupler must couple with a common draw-bar with greater safety to the brakeman than he can couple two common draw-bars. Unless this is so the new coupler fails in the chief requirement. Applying this test to the most prominent devices that dispense with all loose parts we find:

"The Janney manifestly more dangerous to the brakeman than the coupling of the two common draw-bars; the Cowell and the Miller are equally if not more dangerous than the coupling of two common draw-bars; the Hilliard and the Byron are equally dangerous, and the Ames is less dangerous where the common draw-bar is lower or of equal height, but more dangerous where the common draw-bar is higher than itself.

"If the members of this Club can agree upon the following three points: 1, the pre-eminent importance of securing the safety of the brakeman; 2, the absolute necessity of coupling the new with old draw-bars, and 3, the fact that none of the known devices give any greater safety to the brakeman, it follows that either some new device without loose parts is required, or a selection must be made of loose-link couplers.

"The economy by dispensing with the loose link is merely assumed. Statistics of the cost per annum of links and pins are not conclusive as to the real cost of the link and pin compared with other devices. From the gross amount paid for links and pins in any given year must be deducted the cost of pins lost on improved link and pin devices; the links and pins for new cars; the scrap value of broken links and pins; the cost of repairs to the substitute for a loose link; and, finally the additional first cost of the device which dispenses with the loose link.

"I believe that the loose link will prove more economical."

Though this letter contains many assertions which are very open to question, it elicited no discussion, and the President called on the various car-coupler inventors present to step forward and explain their devices. The following gentlemen responded: Mr. William H. Meadows (of Tennessee); Mr. John T. Wilson (Pittsburgh, Pa.); Mr. William Styles (Wallace car-coupler); Mr. Chas. A. Beach; Mr. Manley Howe; Mr. Frank H. Stanford; Mr. Robert H. Hitchcock; Mr. A. B. Holmes; Mr. Robinson; Mr. William Emmett (Logansport, Ind.); Mr. Thos. B. Nutting; Mr. Fish (Universal coupler); Mr. W. H. Thurmond (Georgia); Mr. Barnes (Syracuse, N. Y.); Mr. Geo. E. Nichols (Elmira, N. Y.); Mr. E. G. Hilton (Excelsior car-coupler); Mr. Herick (Cowell coupler), and gentlemen representing the National, the Howard, the Curtis & Wood, the Know-Nothing, the Hoosier and the Eureka freight-car couplers.

The following resolution was then read and adopted without discussion:

"Whereas, It is generally conceded that automatic freight car couplers must of necessity be adopted by the leading railroads of the country at an early day, and whereas it is our belief that the railroads are not as yet in possession of sufficient information as to the merits of the several devices now actually in use to warrant them in the adoption of any of them without further practical test—

"Resolved, That the Executive Committee of the Master Car-Builders' Association examine critically such automatic couplers as are now in actual use, recognizing as the prime requirement in each coupler that they must interchange automatically with each other, the Committee to select not more than five of the most practical of the devices examined, and report what devices were so selected to its members within thirty days.

"Resolved, That the Executive Committee thereupon be authorized to negotiate with a corresponding number of railroads, each of which shall equip 25 of their freight cars (free of royalty to patentee) with one of the couplers which may have been selected by the Committee, such cars to be at once placed in the service at such points and in such traffic as will permit of a careful record being kept of the perform-

ance of the coupler, and more especially of each and every failure, with the cause therefor, a report of such failure to be made in writing to the Executive Committee every 30 days for three months after such cars have been placed in service."

Mr. Blanchard then addressed the meeting, and urged those present to free their minds from prejudice in examining this matter, and related the following anecdote as an example to be avoided.

"I once commenced building locomotives in Springfield, Mass., and I had a very intimate friend in New England. I said to him, 'Now, sir, I am commencing this business and it is going to take about all the money I can get together, and it is important that I should begin right. I think I shall begin by building a link-motion engine.' He said, 'Oh! Mr. Blanchard, I would not do that.' 'Why not?' said I. 'Why, because they are not good for anything.' 'Well, now, how do you know they are not good for anything? Have you ever built one?' 'No.' 'Have you ever had one on your road?' 'No.' 'Well, how do you know they are not good for anything?' 'I know damn well they are not good for anything,' said he."

Mr. Blanchard then urged that they should come to a speedy decision on the subject, or a coupler would be forced upon them by the legislatures of the different states.

The club then adjourned until the next meeting on Dec. 18, when the subject of "Car Wheels" will be discussed.

Signaling Apparatus Protecting the West Shore Road Along the Highlands.

Mr. J. E. Childs, General Superintendent of the New York, Ontario & Western Railway, has sent to Thomas W. Spencer, C. E., Inspector for the New York Railroad Commissioners, an account of the various electric and pneumatic signals applied on the 13 miles of the New York, West Shore & Buffalo Railway south of Cornwall, from which we take the following:

This portion of the track, used by the West Shore and the Ontario & Western companies, lies along the foot of Dunderberg, Storm King, Cro' Nest, and other mountainous regions of the Highlands of the Hudson, where the rocky cliffs on the one side and the very deep water on the other necessitate considerable curvature. In some cases the water in the river was 90 ft. deep, only 20 ft. from the shore, with bottom of shelving rock, where we were unable to make an embankment, and were obliged in several instances to put in long spans of iron bridges. We also have on this 13 miles two jack-knife draw-bridges, one cantilever bridge, one tunnel and the sharpest curves (though very short) upon the road.

It was considered advisable on account of these features of this portion of the line, to place upon it the best system of automatic signals that could be found. Mr. George Westinghouse, of Pittsburgh, having just procured letters patent upon his new automatic, electric and pneumatic block signals, we arranged with him to equip this 13 miles.

The power for compressing the air is furnished by two 10 horse-power engines, located near either extremity of that portion of the line which is covered by the block signals. The air after being compressed is passed through coils of pipe and two cylinders where it is cooled, and is sent through a pipe 1 in. in diameter which is laid between the tracks. At intervals of three-fourths of a mile we have established semaphore signals for each track. These signals are located at points where they can be seen for the greatest distance, and are connected by a pipe with the main air-pipe lying between the tracks. The signals are operated by compressed air cylinders, the valves of which are controlled by electric currents, one of which passes over the line on telegraph poles and the other through the rails. The signals are controlled by short-circuiting electric current in the rails when a train or engine passes over the track, the current passing through the wheels and axles from rail to rail. Opposite each semaphore signal is a battery well, built of brick below the surface of the ground, and containing for each semaphore signal a seven-jar battery.

When a train passes into the block the signal immediately behind the train shows both arms at a horizontal position by day, and two red lights at night; this is called an absolute danger signal, or the second danger position. The second signal from the rear of the train shows the upper arm in an inclined and the lower arm in a horizontal position by day, and a red and white light by night; this is called the first danger position.

You will see that by this system when one train follows within one mile and a half of another, it is warned that a train is preceding it, and the first appearance of the signal not only indicates danger but absolutely locates it. For instance, if the engineer sees a signal with the upper arm inclined and the lower arm horizontal, or showing a red and white light, he knows that a train is ahead of him, but that the block immediately ahead of this signal is clear and that the train or obstruction is upon the second block. If he sees a signal with both arms projecting in a horizontal position, or showing two red lights, he knows that the danger is imminent and that a train or obstruction of some nature is upon the block ahead of this signal.

A book of instruction is furnished to employes, which, without describing the details of the signals at all, gives them all the information which they require and shows the simplicity of the system.

In addition to this we have every switch upon this portion of the line interlocked with the circuit in the track in such a manner that whenever the switch is opened two danger signals are shown upon the main track from which the switch is turned. The electric current also passes into the rails of the side-tracks out to the clearance distance, so that, should a car standing on the side-track be moved by malicious persons, or should it be blown by the wind to a point where it might interfere with the traffic, two danger signals are immediately placed automatically upon the track in the direction from which the trains approach.

We also have two draw-bridges which are connected with this system in the following manner: The two jack-knife bridges on this portion of the line are connected with this system without changing the form of the automatic signals, two of them being made to act as distance and home signals for the draw-bridge. When a train approaches within 8,000 ft. of the bridge, an electric bell is sounded continuously directly over the head of the watchman who attends to the draw-bridge, warning him that the train is approaching and that he must not open the draw. This bell rings from the time the train passes over a point 8,000 ft. until it passes a point 7,000 ft. from the draw-bridge, when the gong ceases to sound. If, during the time the train is running from the 8,000 ft. to the 7,000 point, the watchman should, contrary to instructions, undertake to open the draw-bridge, he cannot do so without first setting two danger signals in the face of the train, while the train is still one and one-half miles distant from the bridge. After the train has passed over the point 7,000 ft. from the draw-bridge, the draw-bridge is locked by electricity and cannot be opened. As

these draw-bridges are on double track the signals operate in the same manner for both directions.

This I consider a very perfect system for the protection of a draw-bridge, and I could suggest only one improvement, which we are now considering; that is, to have a switch near the draw-bridge, which shall throw the train off the track rather than let it into the draw in case the engineer disregards the signals.

We also have some crossings protected by electric bells which ring at the crossing when a train approaches from either direction within one mile, and the bell continues to ring until the train has passed the crossing.

We also have, aside from the block system, an electric tunnel block signal, protecting trains while passing through the Haverstraw Tunnel, which works automatically. When a train reaches a point within 2,000 ft. of the tunnel, by short-circuiting an electric current in the track, a larger signal is set in the rear of the train which remains at danger and prohibits other trains from entering the tunnel until this train has passed entirely through and 2,000 ft. beyond the tunnel, when the signal goes to safety.

During the month of October 1,065 trains passed over this portion of the line. There are in all 45 signals, including the home and distance signals for the drawbridges, making 47,925 signal movements during the month. From the attached report you will see that the total number of failures during this period was 68, including Oct. 28, when a break occurred in the main pipe at Fort Montgomery, which set all signals at danger, or about one-seventh of one per cent.

You will observe that with only one exception the signals went to danger and consequently caused no harm other than a slight delay to traffic.

These signals have been in operation since April 1, 1884, and in that time but two failures of the signals where they were at safety and should have indicated danger have been reported.

You will also observe that a number of failures occurred through broken battery jars. We found those jars were too light and are now substituting heavier ones.

You have no doubt, seen reported in the papers that an engine ran into Popolopen draw-bridge in the month of October. This was not through any fault of the signals, as the engineer admitted, having passed the distance signal 7,000 ft., and a home signal 650 ft. from the draw, both set at danger.

From experiments recently made, I believe that this 13 miles of automatic block signals can be operated with one engine located at a point about the centre of the system, and I shall make this change in a few weeks, which will reduce the cost of operating the signals.

The "Joint Reply" to the Rock Island Statement.

We published last week the reply of Mr. St. John, of the Chicago, Rock Island & Pacific Railway, to charges made against the conduct of the competitive passenger business of his road, in which he made counter-charges against three of his competitors. These three companies have united in a "joint reply," signed by A. V. H. Carpenter, General Passenger and Ticket Agent of the Chicago, Milwaukee & St. Paul, W. A. Thrall, General Ticket Agent of the Chicago & Northwestern, and Percival Lowell, General Passenger Agent of the Chicago, Burlington & Quincy. The substance of this joint reply is given below:

For the charges which Mr. St. John ascribed to Geo. H. Heafford, Assistant General Passenger Agent of the Milwaukee & St. Paul, the joint reply says Mr. Heafford's Chief, Mr. A. V. H. Carpenter, is responsible. His company gave notice Sept. 13 that it would cease to be a party to the February agreement after five days, which was the notice required, but it afterward extended the time to Sept. 29. At the meeting Sept. 29 and 30 the Rock Island had two representatives, who heard the charges and received copies of them. These representatives neither affirmed nor denied any of the charges.

The Burlington, the Northwestern and the St. Paul then united to protect their business from diversion by the Rock Island, selling rebate tickets at the price at which the Rock Island's transferable mileage tickets could be bought. Thereupon the persons selling these mileage tickets reduced their prices, and by successive reductions by both sides the rate was brought down to \$1 from Chicago to Council Bluffs.

The proceedings of the meeting of Sept. 29 and 30, and the circulars afterward issued by the three roads complaining of the Rock Island were issued in order that the roads east of Chicago might not take part in the controversy and so injure the local business between Chicago and Council Bluffs. These three roads have acted strictly on the defensive, never taking the initiative in reducing rates, but simply meeting the rates of parties dealing in Rock Island tickets. They have preferred a conservative course "so that when the time for settlement of difficulties shall arrive, as it necessarily will, a calm and business-like consideration of the matter may not be prevented by needless bitterness."

With regard to the charges made against the Rock Island at the September meeting, and Mr. St. John's answer to them, the joint reply says:

When the February agreement was made, the three roads urged that all tickets of the issues of foreign roads held by brokers should be redeemed by the road over which they were issued. The Rock Island refused to do this, claiming that the agreement did not apply to such tickets. Mr. St. John virtually confesses making reductions to meet, as he says, the rates at which foreign roads' tickets were sold by brokers in Chicago. Yet he refused to agree to measures for taking such tickets out of the market. He says that he supposed there were no such tickets in brokers' hands, but found that there were enough to carry the travel for months, and therefore had a right to protect himself. As he had defeated the attempt to retire these tickets, and could have withdrawn from the agreement on five days' notice, this does not excuse his violation of it.

With regard to the Rock Island's answer to the complaint that it demoralized rates by large issues of transferable advertising mileage tickets, namely, that they were in use before the agreement was made, the joint reply says that does not render improper a complaint that they have since been used so as to cut rates. The purpose of the agreement was the maintenance of rates, and the use made of advertising tickets prevented that. The Chicago, Burlington & Quincy and the Chicago & Northwestern do not deny that at one time they used transferable advertising tickets. They did it to protect their interests in the Council Bluffs pool against an evasion of its terms by the Rock Island through the issue of these mileage tickets. The Burlington & Northwestern limited their tickets to one year, found the experiment a costly one, and abandoned it three years ago. It is a fac-simile of one of the Burlington's three-year-old tickets that is printed on the back of the Rock Island circular. The three agents writing in the joint reply repeat that quantities of the Rock Island's transferable mileage tickets can be bought at brokers' offices at prices which enable passengers

to travel on them between competitive as well as local points at much below regular tariff rates.

The Rock Island's answer to Charge 4, which asserted that transferable mileage tickets are supplied to brokers directly from the Rock Island general office, is declared to be a denial "which any one conversant with the handling of these mileage tickets by ticket brokers will not consider sufficient."

The insinuation in the Rock Island's statement, that the road (the St. Paul) complaining of a cut of rates on Kansas City tickets had no interest in the matter because it was not part of a Kansas City line, is declared to be unfounded, because a cut in the Kansas City rate reduces rates to all trans-Missouri points via Council Bluffs. The Rock Island's statement that it purchased a ticket from Chicago to Kansas City reading over the St. Paul and the Kansas City and Council Bluffs roads "six months ago or more" needs to have the "or more" italicized. The agreement of Feb. 2 abolished such tickets.

The Rock Island did not deny the complaint of importing foreign tickets made in Charge 6.

The answer made to the charge that a 500-mile ticket, purporting to have been issued in Chicago to a Denver paper Sept. 18, was on sale at a broker's office in Chicago Sept. 22, was that the company held a contract with the paper, and a receipt for the ticket, which a representative of the paper in question received, not in Denver, but in Chicago, Sept. 18. The joint reply says that the complaining roads, before making the charge, had been informed at the Denver office of the paper in question that it did not have a contract with the Rock Island, and did not take mileage tickets for advertising. The point of the charge was chiefly to show how quickly such tickets reached brokers' hands, and how much below regular rates they are sold.

With regard to the Rock Island's countercharge that the Wisconsin, Iowa & Nebraska road issued unlimited round-trip tickets from Des Moines to the Democratic convention in Chicago, the return part of which was supplied to Chicago brokers for \$5.50, and used to cut rates from Chicago to Des Moines and Council Bluffs, it is replied that this cost price to the brokers, plus the local rate from Des Moines to Council Bluffs, makes a through rate of \$9.76, which exactly met the rate made by mileage tickets at 2 cents a mile. The Milwaukee & St. Paul did not authorize the placing of such tickets on the market, and will do its part toward getting them out of it when all other tickets by which through rates can be cut are ready for redemption.

The joint reply closes as follows:

"In conclusion, the whole matter can be settled without difficulty when the Rock Island road is ready to refrain from inflicting injury upon its neighbors through its peculiar methods of doing business.

"We do not consider it a fair answer for that company to make, that we are at liberty to adopt its mode of paying for advertising.

"We are satisfied that we cannot adopt that mode without causing serious loss in revenue, and incurring the danger of a permanent reduction in rates, the responsibility for which we are not prepared to assume; we prefer to use our best efforts to maintain rates, as we have too much respect for the rights of those roads which might be affected thereby, whether friendly lines or square-toed competitors, to do otherwise."

"We believe that no road has any right to pursue a policy which has no reference to and takes no account of the rights of other roads.

"With these remarks we leave the question to the good sense and judgment of all intelligent and upright business men as to whose cause is most just."

The Baltimore & Ohio Report.

The following are extracts from the report of President Garrett, of the Baltimore & Ohio, which were necessarily omitted last week:

LOCAL DEVELOPMENTS.

"Commodious, substantial and attractive station houses or depots, built of brick, with slate roofs, and with all modern conveniences for the comfort of passengers and for the safety of freights, have been erected during the year at Laurel, Hyattsville, Woodstock, Sykesville, Summit Point, Gaithersburg and Mountain Lake, and others are in course of erection at Oakland and Parkersburg. In furtherance of its policy of fostering and developing at all points on its system the construction of dwelling houses and the establishment of manufacturing and industrial enterprises of every description, this company has announced its readiness to make liberal reductions from its local tariffs. The Baltimore & Ohio road passes through a territory which is both healthful and beautiful, affording numerous admirable sites for building. This territory, as a rule, enjoys genial winters and favorable climatic conditions. The lands on, adjacent to and connected with the system of the Baltimore & Ohio Co. and its connections are not only reasonable in price, but are also rich and fertile, well wooded and watered, and are excellently adapted for agriculture, stock raising and grazing. Their proximity to large cities and towns, as well as to the unsurpassed export facilities of the port of Baltimore, will afford remunerative markets for their products. The regions which the lines cover are also noted for immense water power, rich deposits of ores and minerals, many varieties of woods, timber and building materials, and for superior coals for steam and gas purposes. These important factors must continue to command appreciation and development.

TELEGRAPH, EXPRESS AND SLEEPING-CAR ORGANIZATIONS.

"The policy of the company in owning and operating its expresses, telegraphs, sleeping and parlor cars, elevators, etc., continues satisfactory. The results of operating its own sleeping-cars have been 92 per cent. better than when under the control of the Pullman Co., and the gain to this company by operating its own expresses has been 61 per cent. over the period when the lines were controlled by the Adams and other companies.

"This company has been engaged for many years in contests with the Western Union Telegraph Co. to regain and hold possession of its telegraph property, and it is gratifying to announce that the equities of its position have been thoroughly vindicated on all occasions when the questions have been submitted to the courts. The telegraph system of the company is, therefore, now entirely under its own control. The policy laid down by the late President in his address to the board in June, 1882, in which he announced that the Baltimore & Ohio Co. 'had deliberately determined to maintain the absolute independence of its telegraph system,' and that it intended to effect 'such connections as would enable it to maintain firmly and successfully its independence as a great competing organization,' and that in furtherance of that policy it would 'continue to enlarge its capacity to meet all requirements,' has since been continuously acted upon, until the Baltimore & Ohio telegraph system now represents 6,866 miles of poles and 47,417 miles of wire, in the acquisition of which there has been expended, during the fiscal year, \$2,012,000. The company now has a telegraph system twice as large as that of the Atlantic & Pacific, which was sold in 1881 for

\$8,500,000 in stock of the Western Union Co., and one and one-quarter times as large as that of the American Union Co., which was sold for \$15,000,000 also, in the same stock, and by the close of the year it will have a mileage nearly as great as both of those companies combined, while the location and character of its lines render them far more valuable. President Bates, of the Baltimore & Ohio Telegraph Co., who has recently inspected the property, states in his report that the lines are thoroughly and strongly built; that the offices are well located, and that the staff is active and efficient. The expenditures for the past year have been made at a time when material was obtained at a reduction of at least 15 per cent. below the lowest prices at which any lines were ever constructed in this country. The system exceeds in capacity that of any other competing telegraph company, and between the two great cities of the East and the West is believed to have facilities equal to those of any company. Looking at its cost, compared with that of the system of its main competitor, it is believed that it can obtain and hold such a volume of business as will yield very satisfactory net results from the expenditures. The public have already received, and will continue to receive, advantages and economies from the competition offered by a system of such strength, permanence and magnitude. Since the company commenced its own commercial system in 1877, its telegraph expenses incident to its railroad business have been reduced fully 43½ per cent., while its receipts from railroad business have increased 50 per cent. It is believed when the system of telegraphs created by the Baltimore & Ohio Co. has been perfected, that the operating expenses of the Telegraph Department for railroad business will be further reduced.

"The bonds and stock of the Baltimore & Ohio Telegraph Co., a separate corporate organization, to be issued to the railroad company for the advances of the latter in the construction of the telegraph lines, are in course of preparation, will soon be in the company's treasury, and will constitute a very valuable asset.

BALTIMORE & OHIO EMPLOYEES' RELIEF ASSOCIATION.

"This Association continues to prosper and increase in usefulness. It has now a membership of 17,798, and the payments for their benefit during the year have been \$216,945, making an aggregate, since the inauguration of the Association, of \$766,208. Renewed attention has been given to the sanitary condition of localities on the road, to the shops and their surroundings, and special efforts have been made to prevent disease among the company's employees by the judicious distribution of remedies which experience has shown to be valuable. Prior to admission into the service medical examination is required.

"To enable the Baltimore & Ohio Employees' Relief Association to further extend the good which it has already accomplished, this company, by the action of the board of directors, has decided to add \$25,000 annually to its former yearly contribution, to be devoted to a fund known as the Pension Feature, by which provision is made for its aged and infirm employees. The work of the Association now embraces benefits to its members when injured, when sick, when aged or infirm, and after their death also provides for payments to their representatives.

"The Savings Fund and Building features continue to grow in favor. The deposits during the year amounted to \$39,220, making the aggregate deposits \$181,776. The greater portion of this sum has been loaned to members for the purchase and improvement of homesteads upon the lines of the company, so that through the working of these features of the Association, many employees have been enabled to become owners of the dwellings in which they reside.

TECHNICAL.

Locomotive Building.

The Terre Haute & Indianapolis shops in Terre Haute, Ind., have begun work on a new switching engine for the road.

H. K. Porter & Co. are at work on another locomotive for the railroad in the Island of Yesso, Japan. It will be completed in January, and its gauge will be 3 ft. 6 in. Its name will be "Shidzuka." This will be the sixth locomotive which H. K. Porter & Co. have made for this road. Within the last week they have also been favored with two other inquiries for locomotives for use abroad, namely, one for Japan and one for China. Messrs. Porter & Co. are also at work on a 30-in. gauge locomotive for use at a silver mine in Mexico, and will complete it in December.—Pittsburgh American Manufacturer.

The Manchester Locomotive Works in Manchester, N. H., have 26 locomotives in progress for different roads, business being better than for some time past.

Car Notes.

The car works of Blair Brothers in Huntingdon, Pa., have started up, after a stoppage of several months.

There has been a reduction of the working force at the Pullman Car Works in Pullman, Ill., which, it is hoped, will be only temporary.

Negotiations are pending for the establishment of a new car wheel foundry at Youngstown, O., in which local capitalists are interested.

Bridge Notes.

The Louisville Bridge & Iron Co. recently completed a combination truss span over Flint River for the Memphis & Charleston road.

The Philadelphia Bridge Co. has taken the contract for a new iron bridge over the Kenebec River at Waterville, Me., to replace an old wooden bridge, which has been condemned. The contract price is \$26,286, the work to be finished by March 1 next.

Iron Notes.

The Union Foundry & Machine Co. in Catasauqua, Pa., completed a heavy order for large cast-iron columns for the new gas-works in Philadelphia.

The Fishback Rolling Mill in Pottsville, Pa., which has been running half-time, has started upon longer time, making bridge and architectural iron.

The four blast furnaces of the Pennsylvania Steel Co. are running very successfully, and on last Wednesday made the largest production in the history of the works. The product of the four furnaces was 527 tons of first-class iron.—Steel-ton (Pa.) Reporter, Nov. 15.

The Girard Iron Co. will put its furnace in Youngstown, O., into blast early in December.

The Oliver & Roberts wire mill in Pittsburgh has resumed work after a short stop, the workmen accepting a small reduction in wages.

Manufacturing and Business Notes.

Messrs. H. H. Westinghouse, Wm. Lee Church, Walter C. Kerr and I. H. Davis have formed the firm of Westinghouse, Church, Kerr & Co., contracting and consulting mechanical engineers, with principal office at No. 17 Cortlandt street, New York. They will furnish machinery of all kinds of approved patterns, and will deal especially in the Westinghouse automatic engine. The office formerly maintained by the Westinghouse Machine Co. in New York

is transferred to them, and they will undertake entirely the sale of these engines in the Eastern states.

The American Shipbuilding Co., in Philadelphia, has recently completed a new steamer to run between Boston and Norfolk, a steamer for carrying fruit from Southern ports, and two small steamboats to go to Mexico.

A Winter Bridge Over the Mississippi.

The Central Iowa Co. is now at work on a winter bridge over the Mississippi at Keithsburg, Ill. The plan consists of a pile bridge 6 ft. above the ordinary winter stage of the river, which will be completed before the river is closed with ice, excepting the steamboat channel, which will be completed as soon as ice closes navigation. Surveys have been completed and data secured for the construction of a permanent bridge at this point, which it is the intention of the company to construct during the season of 1885. This bridge will be 2,000 ft. long, with 1,500 ft. of approaches on each side of the river. Draw span 360 ft., raft channel span 280 ft., and seven spans of 200 ft. The height of piers will be 47 ft. above the hardpan strata underlying the river bottom at this point. Work is under the charge of John F. Wallace, Civil Engineer.

Engineers' Club of Philadelphia.

A special business meeting of this Club was held Nov. 1, President William Ludlow in the chair; 30 members present.

The board of directors reported that the occupancy of the new club house had been delayed by the consideration of extensive changes in the block in which it is located. The tellers of election reported the following gentlemen elected active members: Bard Wells, Frank A. Hill, R. Meade Bache, Emil Forder, W. E. C. Coxe, Philip Pistor, O. B. Harden, Thos. H. Loomis, Barton Hoopes, Jr., Wm. F. Bidle, Lindley M. Winston, H. W. Sanborn, S. Craig McComb, Wm. H. McCallum and Wm. H. Wiley.

The Secretary presented, for Mr. A. W. Shearer, "Notes upon the Relative Cost of Haulage in the Anthracite Mines of Pennsylvania by Mules and Locomotives." These embodied the results of investigations by Mr. Thos. H. Phillips, Superintendent Kalmia Colliery. The results are as follows: Cost per ton mile: by locomotive, 0.6 cent; by mules, 1.82 cents; saving per ton mile by locomotive, 1.22 cents. This includes operating expenses and depreciation, but does not include the additional number of cars and turnouts and repairs to roads, required for mule service.

The Secretary also exhibited for Mr. Shearer a set of electrical photographs of the Kohnor Colliery mine workings. The exposures were from 20 to 30 minutes and the results are excellent.

The Secretary exhibited the Bush interlocking rail bolts, which interlock within the tie under the middle of the rail.

Mr. Thomas M. Cleemann continued some previous remarks that he had made on the "Strength of Wrought-Iron Columns," showing how some recent experiments by Mr. James Christie, at the Pencoyd Iron Works, gave values of the constants in Rankine's formula somewhat different from those generally used, and which would, therefore, be better to adopt for calculating their strength in structures of American iron.

In discussing the above Mr. James Christie stated that the experiments referred to by Mr. Cleemann were subsequently supplemented by similar experiments on steel, and a basis established for the relations existing between steel and iron compression members for structures. In addition to the practical results obtained, the experiments were of peculiar interest, inasmuch as they add additional confirmation to the ordinary theory of flexure as propounded by Euler a century ago. Experiments on beams of iron and various grades of steel show a practically uniform elasticity, however different the materials may be in ultimate tenacity. When the lengths of columns are so great in proportion to cross dimensions that failure will occur almost entirely by bending, then the elasticity of the material is the sole measure of its resistance, and the common theory of flexure will apply. The experiments showed that, when certain ratios of length to cross-section were reached, uniform resistance occurred between iron and steel, a fact, he believed, not heretofore known.

The Secretary presented, for Mr. R. W. Jones, "Notes upon the Blue Process," for the Reference Book.

Mr. C. A. Ashburner exhibited and described Part I. of the large atlas of the Anthracite Coal fields of Pennsylvania by the Second Geological Survey of Pennsylvania.

Capt. O. E. Michaelis presented a blackboard description of what he was allowed to see at the recent exhibition of the Keeley Motor in Philadelphia.

Exhibits at New Orleans.

Among the Philadelphia establishments which will have exhibits at the New Orleans Exposition are the Allison Manufacturing Co., railroad cars; Baldwin Locomotive Works, locomotives; J. G. Brill, passenger cars; Cambria Iron Co., large exhibits iron, steel and ores; Clark, Reeves & Co., bridges; Hoopes & Townsend, bolts and nuts; William Sellers & Co., machine tools; A. Whitney & Sons, car wheels.

The Eames Vacuum Brake will exhibit its brake applied to a train of cars. The Barnes car coupler will be exhibited on some freight cars.

The Rote Automatic Car Brake.

Professor S. W. Robinson, State Inspector of Railroad Appliances in Ohio, has made a report on tests of this brake to the Hon. H. Sabine, the Commissioner of Railroads of the state of Ohio. The report gives the following results of tests on short freight trains:

No. of test.	Speed—Miles per hour	Grade—Feet per mile down	Distance in stop—Feet	No. of cars.		Air-brake used on tender
				With brake	Total in train	
1	27	47	1,182	11	13	Yes.
2	27	47	2,220	11	13	Yes.
9	25	47	720	11	12	No.
13	25	Level	370	11	14	No.
16	25	30	540	10	10	No.
17	25	30	540	10	10	No.
18	25	30	540	10	10	No.

No hand brakes were used on any of the cars, the train being handled entirely from the engine, and no stops were made except with the engine and tender brakes in conjunction with the Rote brakes.

"The figures of the table show that for all ordinary grades the Rote brake alone in conjunction with the engine is ample for the entire handling of freight trains.

"1st. A car cannot be stopped without the brakes for

that car being thrown off by positive action and without taking out the slack.

"2d. For all low speeds of about two miles per hour or less the brakes are entirely out of action, so that cars may be switched about in a yard without knowledge of presence of the automatic brakes.

"3d. If a brake fails to operate by the accidental breakage of any part that brake goes permanently out of action.

"4th. In backing long distances at speed the brakes do not go on, so that a train may be backed over summits and through sags in track without inconvenience.

"5th. A car at home or abroad never offers inconvenience whether its Rote Automatic is in or out of order.

"In short, the brake is in my judgment worthy of careful consideration on the part of railroad men."

Steel Barges.

Nov. 10 the firm of D. W. C. Carroll & Co., of Pittsburgh, launched two steel barges which are to go to South America. The barges are the first of their kind that have been built here, and are fine models of their class. They are for a New York firm engaged in the South American copper trade, and the craft will be sent to this city on freight cars. Each barge is 38 ft. long, with a 10-ft. beam and a 4-ft. hold. They are built to carry 30 tons at a draft of 2½ ft. of water, and will be used to transfer copper ore to steamers. The same firm are just completing a handsome steel tug for W. H. Brown & son. It is fitted with a screw propeller, and is expected to be the finest tug of its kind ever seen on local waters. Although steel is now supplanting iron, it was as recently as 1840 that the firm of Robbins & Minis built the first iron steamer at Pittsburgh that was ever built in the United States. It was called the "Valley Forge." In 1880 James Rees & Sons built the first steel barge designed for South America. This year the first steel barge for coal purposes was built by W. H. Brown's Sons. It is expected that this will be followed by steel hulls for steamboats.—Pittsburgh Dispatch.

Steel Lake Steamers.

The Western Transportation Co. has decided upon having two more steel steamships of the same build and dimensions as the "Albany" and "Syracuse," and will order their construction during the coming winter. The Detroit Dry Dock Co. will build the new vessels. The "Syracuse" and "Albany" are the most successful craft which have been constructed on the lakes in many years. They have speed, branty of outline and proportions, and large capacities for carrying freight, and are provided with large fore and aft canvas, which can be turned to account in the event of their machinery breaking down. In every respect they are fine vessels, and resemble, except in point of size, the large ocean steamships. Their cost was about \$200,000 apiece. The new boats will cost about as much.—Chicago Inter-Ocean.

THE SCRAP HEAP.

"A First-Class Notice."

A lady writing from Columbia, Tex., to the editor of the Bulletin of the American Iron and Steel Association, gives an account of what used to be known as the Houston Tap & Brazoria Railroad, a line 50 miles long now owned by the International & Great Northern Co. This letter, we fear, will not earn the writer an annual or even a trip pass over this line. Some extracts are as follows:

"Built before the civil war, it was worn out during that struggle and never thoroughly repaired. As years passed, its condition changed from bad to worse, until at last the single train which leaves Houston one morning and Columbia the next has to proceed at such a rate of slowness that the greater part of the day is spent in making the 50 miles between the two ends of the line. Human patience can stand a great deal, and this tedious creeping might not be quite so unbearable if there were any certainty that nightfall would see the journey at an end. Such is not the case. Heavy rains often convert the road-bed into a soft mass, and down sink ties and rails, rendering progress impossible until a gang of men pry up the rails and hold them in position while the train with movement almost imperceptible proceeds a few feet, and thus on until all the Christian virtues the unlucky passengers may possess are exhausted."

"Bad as creeping along may be, worse than that can happen to those whom cruel Fate throws on the mercy of the 'Tap.' The engine is prone to take rests—doubtless the enervating nature of the climate is to blame for this last,—and consequently it not infrequently slides quietly off the track into some convenient ditch. Tradition says that the engine has been known to repose in its chosen resting place for days and nights together, the unfortunates whose unhappy destiny had brought them aboard at that particular time all the while looking anxiously for deliverance, which once in a while did come in the shape of a hand-car. One lady here left home one morning, staid in the ditch most of the day and night, and ended by making her entry into Houston on a hand-car at 2 a.m. the next day. Deliverance such as this, however, is not the rule. Generally there is nothing to be done but wait, make the best of a situation whose best must needs be bad, and bless the railroad company. Not that this corporation is anywhere disturbed by blessings, protests or the like; to all expostulations comes the answer, 'There were never any lives lost on this road.' This is acknowledged to be true; but the company need not take any of the credit to itself, for how could it be otherwise? The road runs partly over prairie, partly through woodland; there are no precipices or embankments to go over, no deep rivers to cross, no bridges to fall through, and collisions are out of the question where there is only one train, running one day from Houston and the next day from Columbia."

Attempt at Train-Wrecking.

A dispatch from Cincinnati, Nov. 26, says: "The incoming express train on the Cincinnati, Hamilton & Dayton Railway last night had a narrow escape from a frightful accident a few miles from this city. Two men walking on the track discovered formidable obstructions, which would certainly have wrecked the train if they had not given notice in time to allow their removal before the train reached the spot. There is no clue to the criminals."

A Brave Signalman.

An example of bravery and devotion to duty which may cost the modest hero his life was shown during the storm of Sunday night, Nov. 23, on the New York Central & Hudson River Railroad. A few minutes after 8 o'clock, as the Chicago express thundered out from the south end of the tunnel through Anthony's Nose, the explosion of torpedoes warned the engineer to stop the train. The violent gale which was raging and the splashing of the river close by the train first suggested that the track had been washed away, but it was soon discovered that the upper signal tower at Highland station had been blown down and lay across the tracks, and under its ruins lay the body of John Callahan, a brave signalman who had faced death to perform his duty. He was extricated from the wreck and found to be still alive. He explained that the gale shook the signal tower so severely that he was sure it would go over. He

went up the road and saw the torpedoes. Then he returned to the tower to attend to his signals, and was buried in the ruins when the gale demolished the structure. Callahan was removed to the Peekskill station, his condition then being very precarious. His constant moanings were about his grandchildren and pleadings to know of the train officers if he had done all right. There was collected among the passengers \$75, thankful tribute to his devotion to duty and an earnest of further efforts to see him more completely rewarded.

Opening the Car Window.

Maybe a man feels happy and proud and flattered and envied and blessed among men when he sees a pretty girl trying to raise the window of a railway car and jumps up and gets ahead of the other boys, and says: "Allow me?" Oh, so courteously, and she says: "Oh, if you please: I would be so glad," and the other male passengers turn green with envy, and he leans over on the back of the seat and tucks the window in a knowing way with one hand, if peradventure he may toss it airily with a simple turn of the wrist; but it kind of holds on, and he takes hold with both hands, but it sort of doesn't go, with any alarming extent, and he pounds it with his fist, but it only seems to settle "a little closer into place," and then he comes around and she gets out of the seat to give him a fair chance and he grapples that window and bows up his back and tugs and pulls and sweats and grunts and strains, and his hat falls off and his suspender buttons fetch loose and his vest buckle parts and his face gets red, and his feet slip, and people laugh, and an irreverent young man in a remote seat grunts and groans every time he lifts, and cries out, "Now then altogether!" as if in mockery, and he bursts his collar button, and the pretty young lady, vexed at being made so conspicuous, says in her icest manner, "Oh, never mind—thank you, it doesn't make any difference," and calmly goes and sits down in another seat, and that weary man gathers himself together and reads a book upside down—oh, doesn't he feel just good. Maybe, but don't be fool enough to extend any of your sympathy. He doesn't need it.—Burlington Hawkeye.

Politeness in the Pay Car.

The pay train stopped at Willow Bend to pay the railroad hands and to liquidate claims for cattle on the track in that section. A gaunt, hungry looking granger stepped up to the smart young man who was disbursing the cash in the rear of the car.

"Got my name on your books, Mister?"

"How should I know, unless you tell me your name."

"Kerrect you are. You have got the edge on me there. Well, my name is Rufus McConkey."

"Yes," says the young man referring to his books; "Mr. McConkey, I have you down for a hog."

"Have me down for a hog, have you? Well, I'll have you down for half an hour, and I'll be on top of you, makin' it sorter excitin' to you if you don't revise that express on. Now, say after me, 'Colonel McConkey, school trustee, Fourth district—your name, sir, is on this here list as a bonny fidy creditor of the I. & G. N. Railroad, which the amount are \$10, the value of a Berkshire hog; said amount of \$10 it do me proud to hand to you. Won't you have a cigar, colonel?"

The smart young assistant paymaster repeated after Mr. McConkey, word for word, handed Mr. McConkey \$10, and gave him a cigar. Colonel McConkey put the hammer of his six shooter back to half cock, and then strode out muttering: "Some city chaps think they are smart, but they'll find they has to come out on the prairies to learn politeness and grammar."—Texas Siftings.

Different Kinds of Cars.

There are more different cars on the tracks to-day than one supposes. The Times-Star has prepared a list containing the names of the cars in the various departments, and if any be omitted the fault does not lie with the writer, as it is almost an impossibility to have the list entirely complete. The following, however, is nearly perfect and will prove quite satisfactory:

Passenger line—Common cars, smoking cars, sleeping cars, Pullman cars, Wagner cars, Woodruff cars, Mann boudoir cars, buffet cars, Leighton cars, Leve & Alden cars, Southern sleeper, Worcester cars, palace cars, dining cars, parlor cars, hotel cars, President's car, vice-president's car, director's car, private car, superintendent's car, inspection car, reclining chair cars, emigrant car, combination car, her, maphrodite cars, observation car.

Baggage department—Baggage cars, mail cars, postal cars, express cars.

Freight department—Circus cars, theatrical cars, gondola cars, coal car, lumber car, grain car, cattle car, hog car, sheep car, chicken car, stone car, dirt car, gravel car, construction car, tool car, bridge car, way car, flat car, freight car, caboose (conductor's office), freight, meat or refrigerator cars.

The best car on the road is the "p-a-y car."—Cincinnati Times-Star.

There might be added to the list emigrant sleeping cars, milk cars, fruit cars, hopper-gondolas, ore cars, lime cars, pig-iron flats and log cars.

In the construction department, besides boarding cars, derrick and wrecking cars, there are hand, push, rubble or lorry cars and railroad velocipedes.

There are also differences in names. For instance, on some New England roads a caboose is called a freight saloon. In the South there are shanty cars on construction trains, and many roads have pile-driver cars.

On the Pennsylvania and some other roads there are scale-testing cars, and many railroad men have seen Mr. Dudley's dynamograph car. The list might be almost indefinitely prolonged, however, if all the special cars are taken in.

Getting Into Harness.

"Is the Superintendent in?" asked a gentleman entering the X. Y. Z. railway office.

"Yes, sir, I am he."

"I had considerable trouble finding your office."

"How did you find it finally?"

"Oh, I paid a hackman \$2 to bring me here."

"And what can I do for you?"

"I want a pass to Lawndale."

"To Lawndale? Why the fare is but 15 cents."

"I know it, but I'm a new member of the legislature, and I want to do my full duty, even if it does cost me a little something at first."—Detroit Post and Tribune.

RAILROAD LAW.

Common Carrier—Contract.

In the case of Miller against the Atchison & Nebraska Co., the Nebraska Supreme Court holds as follows, affirming judgment for plaintiff:

1. The statute of limitations as a defense to an action must be pleaded, or it will be considered as waived by the defendant.

2. A rule or custom adopted by a railroad company concerning its contracts with its patrons for the transport-

ation of grain cannot operate upon those of its patrons who have no knowledge of the existence of such rule, and such persons will not be legally bound thereby.

3. When a carrier offers to carry the goods of a shipper for a certain price per car load, and the shipper accepts such offer and ships the goods thereunder, the carrier is bound thereby and cannot be heard to say he will not abide by its terms; and if a greater sum is retained by the carrier, upon sale of the goods, it will be required to respond to the shipper for such excess.

4. If, in an action upon a contract, fair and legal upon its face, it is claimed by the defendant that the contract is void as being illegal and against public policy, such illegality must be pleaded or it will be disregarded by the court in which such action is pending.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Ten months ending Oct. 31:	1884.	1883.	Inc. or Dec.	P. c.
Chi., St. P., Min. & O.	\$4,777,277	\$4,501,429	I.	\$275,848 6.1
E. Ten. Va. & G.	3,236,639	3,359,004	D.	122,365 3.7
Kentucky Cent.	703,524	707,109	I.	3,585 8.0
Nash., C. & St. L.	1,935,100	1,913,235	I.	21,865 1.1
Net earnings	848,624	872,743	D.	24,119 2.7
Utah Central	898,513	973,590	D.	75,077 8.3
Wisconsin Cent.	1,181,336	1,190,127	D.	8,791 0.7
Nine months ending Sept. 30:				
Central Pacific	\$18,580,496	\$18,275,232	D.	\$305,264 1.6
Net earnings	4,775,515	6,644,107	D.	1,868,592 28.1
Eight months ending Aug. 31:				
Cleve., Col. & Cin.	\$2,447,422	\$2,813,418	D.	\$365,996 13.6
Net earnings	587,685	830,861	D.	243,176 29.3
Month of September:				
Central Pacific	\$2,104,903	\$2,426,348	D.	\$321,445 15.3
Net earnings	830,508	1,050,002	D.	219,494 26.0
Cin., Ind., St. L. & Chi.	250,988	249,886	I.	1,102 0.4
Net earnings	101,786	100,760	D.	1,026 1.0
Mom. & Charles	110,384	101,382	I.	9,002 8.0
Net earnings	28,248	35,283	D.	7,035 24.6
Month of October:				
Atlantic & Pac.	\$156,000			
Chi., St. P., M. & O.	625,200	\$674,364	D.	\$49,164 7.8
E. Ten. Va. & G.	412,289	455,792	D.	43,503 9.4
Net earnings	200,915	236,476	D.	35,561 17.7
Kentucky Cent.	80,270	87,290	D.	7,020 8.7
Nash., C. & St. L.	203,737	201,320	I.	2,417 1.2
Net earnings	80,363	92,084	D.	11,721 12.7
Utah Central	112,391	116,127	D.	3,736 3.3
Wis. Central	140,438	160,114	D.	19,676 12.3
Second week in November:				
Chi. & East. Ill.	\$54,655	\$53,782	I.	\$873 2.6
Chi., Ind., St. L. & Chi.	44,979	50,543	D.	5,564 12.4
Louisv. & Nash.	275,950	295,110	D.	19,160 6.9
Ill. & Northern	10,320	10,142	I.	178 1.8
Third week in November:				
Chi., Mil. & St. P.	\$540,000	\$546,885	I.	\$6,885 1.3
Chi. & Nor. West.	486,029	504,208	D.	18,179 3.7
Roch. & Pitts.	23,430	19,340	I.	4,090 21.1
St. L. & San F.	92,500	90,600	I.	1,900 2.1

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

Cotton.

Cotton movement for the week ending Nov. 21 is reported as follows, in bales:

Interior markets:	1884.	1883.	Inc. or Dec.	P. c.
Receipts	166,545	130,841	I.	26,704 19.7
Shipments	135,976	124,022	I.	11,954 9.6
Stock, Nov. 21	229,539	339,748	D.	110,209 32.2
Seaports:				
Receipts	258,774	222,510	I.	36,264 16.3
Exports	198,558	99,940	I.	98,618 98.7
Stock, Nov. 21	801,316	931,806	D.	130,490 14.0

The total movement from plantations for the cotton year (from Sept. 1) to Nov. 21, is estimated at 2,581,357 bales; the decrease, as compared with last year, is 113,193 bales; the decrease as compared with 1882 is 1,430 bales, and with 1881, 34,405 bales.

Grain Movement.

For the week ending Nov. 13, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eleven years:

Year.	Northwestern receipts.	Total.	By rail.	By P. c.	Atlantic receipts.
1874	2,223,849	1,042,623	278,362	28.7	3,977,044
1875	3,276,429	2,376,015	876,901	36.9	4,057,145
1876	2,855,645	2,679,746	1,272,753	47.5	4,329,898
1877	3,624,676	2,717,945	1,611,569	17.0	5,789,879
1878	4,210,813	2,782,672	689,159	24.8	5,649,850
1879	3,540,174	3,476,939	2,947,979	17.1	5,850,402
1880	3,226,360	4,978,795	2,872,293	40.4	6,991,471
1881	3,233,458	2,845,738	2,008,138	70.6	3,990,804
1882	4,552,743	3,824,950	2,106,924	55.1	4,063,612
1883	6,448,180	4,934,604	2,371,186	48.1	3,400,570
1884	5,870,714	4,008,757	1,910,252	47.7	4,724,689

Thus the receipts of the Northwestern markets for the week, though 578,000 bushels less than in the corresponding week of last year, were larger than in any previous year. They were a little more in the previous week of this year (election week).

The shipments of these markets were larger than in any corresponding week except in 1883 and 1880; but the rail shipments were the smallest for five years, which is somewhat remarkable in view of the cutting of rates. The rail shipments were also smaller than in any previous week of this year since the fourth of July. Shipments down the Mississippi were 143,495 bushels.

The receipts of the Atlantic ports were 40 per cent. more than in the corresponding week of last year, and more than in any corresponding week since 1880. They were also 40 per cent. more than in the previous week of this year, and with two exceptions were the largest of the year. The increase over the previous week was almost wholly at New York.

Exports from Atlantic ports for this week to Nov. 15 for five years have been:

Year.	1880.	1881.	1882.	1883.	1884.
Flour, bbls.	160,790	105,303	220,551	154,917	161,229
Grain, bu.	4,114,443	2,219,924	1,771,307	1,444,840	1,750,109

The exports this year were not far different from the average of recent weeks.

Coal.

Coal tonnages for the week ending Nov. 15 are reported as follows:

Year.	1884.	1883.	Inc. or Dec.	P. c.
Anthracite	676,711	696,843	D.	20,132 2.9
Eastern bituminous	203,552	202,917	I.	635 0.3
Coke	43,291	64,784	D.	21,493 33.2

The anthracite market is unchanged, with a fair demand for the sizes most in use for household purposes, but a light one for steam coal.

Cumberland and Clearfield shipments continue large, both

districts having made a larger output this year than ever before.

The coal tonnage of the Pennsylvania Railroad for the week ending Nov. 15 was:

Line of road	Coal.	Coke.	Total.	1883.
Line of road	154,723	41,744	196,467	222,907
From other lines	73,805	1,547	75,352	58,302
Total	228,528	43,291	271,819	281,109

The total tonnage this year to Nov. 15 was 11,548,999 tons, against 10,761,382 tons to the corresponding date last year: an increase of 787,617 tons, or 7.3 per cent.

Cumberland coal shipments for the week ending Nov. 22 were 63,576 tons; total shipments this year to Nov. 22 were 2,601,054 tons, against 2,282,793 tons to the corresponding date last year; an increase of 318,261 tons, or 13.9 per cent.

Jewelers' Sample Trunks as Baggage.

The general baggage agents of the Illinois Central; Minneapolis & St. Louis; St. Louis, Keokuk & Northwestern; Burlington, Rock Island; Hannibal & St. Joseph; Northwestern, St. Paul; Northern Pacific and Omaha roads have addressed the following notice to the public: "The following named companies will not accept any responsibility whatever for the receiving, storage, checking, or forwarding of sample trunks, cases, or packages carried by jewelers or traveling agents for jewelry houses. From and after the date of this notice their agents will refuse to receive from jewelers or traveling agents for jewelry houses, or other persons, any sample trunk, case, or package that they may know, or have reason to believe, contains jewelry or jewelers' samples, either for storage in their baggage-rooms, for checking as baggage, or for transportation in the cars of these companies, nor will they take charge of such trunks, cases, or packages in any manner whatever. Should such be tendered, they will state to persons making the tender that they cannot be accepted."

Territory of the Western Traffic Associations.

Commissioner J. W. Midgley, of the Southwestern Railway Association, Colorado-Utah Association and Pacific Coast Association, has issued the following:

"The business included in the above-named associations, and for the government of which tariff and instructions are from time to time issued from this office, may be described as follows:

The Southwestern Railway Association includes all freight traffic, except lumber, carried by the roads parties to said association, which originates at or passes through the cities of St. Joseph and Kansas City, Mo., and Atchison and Leavenworth, Kan., in either direction, to, from, or through any point on the Mississippi River, from Carondelet, Mo., to Rock Island, Ill., both inclusive, excepting: 1. Business to and from points on the K. C., St. J. & C. B. R. north of St. Joseph. 2. Business to and from stations on the Missouri Pacific Railway north of Auburn, Neb. 3. Business to and from all stations on the St. J. & W. Railway north of and including Hastings, Neb. 4. Business to and from stations on the main line of the Union Pacific Railway. 5. Business to and from stations on the Southern Pacific Railway west of and including El Paso, Texas. 6. Business to and from all stations on the A. & N. R. north of Tecumseh, Neb. (the territory south of and including, Tecumseh being included).

In addition to the business above described, all freight traffic, except lumber, passing via either one of the associated roads, to, through, or from Parsons, Chanute, Garnett, Ottawa, Humboldt, Fort Scott, Paola, Burlington, Empiris, and Junction City, Kan., to, through, or from any point on or east of the Mississippi River, via Kansas City or routes south thereof, excepting local stations on the Kansas & Texas Division of the Missouri Pacific Railway, and business to or from stations on that railway south of the south line of the state of Kansas, is included. All freight, except lumber, carried between Mississippi River points and Endicott and Hardy, Neb.,—points common between the B. & M. R. Railroad of Nebraska and the Central Branch Railroad—is included; also cattle traffic from the B. & M. R. Railroad, as follows: All that west of Red Cloud to Orleans, inclusive; one third that between Hastings and Red Cloud and from the main line east of Hastings to Exeter, inclusive.

The Colorado Utah Association includes all freight traffic, except lumber, and live stock eastward bound, carried over any portion of the road of either one of the parties to the said association, to, through, or from any point on the Mississippi River, from Minneapolis, Minn., to Cairo, Ill., both inclusive, to or from any point in the state of Colorado and the territory of Utah and points on the D. & R. G. Railway, except local stations on the B. & M. R. east of Denver.

The Pacific Coast Association includes all freight traffic carried over any portion of the road of either one of the parties to the said association, to, through, or from any point on the Mississippi River, from Minneapolis, Minn., to Cairo, Ill., both inclusive, to, through, or from any point in the states of California, Nevada and Oregon, and all points west of Lake Pend d'Oreille."

Pacific Coast Divisions.

Mr. Joseph F. Tucker, the Arbitrator, has made the following award of percentages of the traffic between Chicago and Missouri River points bound to the Pacific Coast and to Colorado and Utah:

Line.	Pacific.	Col.-Utah.
Chi., Mil. & St. Paul	16	12
Chi. & Northwestern	20	14
Chi., Burlington & Quincy	18	25 1/2
Chi. & Alton	13	12
Chi., Rock Island & Pacific	17	16
Wabash, St. Louis & Pacific	11	11 1/2
Missouri Pacific	5	9

These percentages are to count from Oct. 1 last.

Lake Superior Iron Ore.

Navigation has now practically ceased on Lake Superior and no more shipments will be made, with the possible exception of one or two small cargoes from E-canaba. The total shipments of iron ore for the season up to Nov. 18 are reported as below by the Marquette Mining Journal, in tons:

From	1884.	1883.	Inc. or Dec.	P. c.
From L'Anse	64,420	66,000	D.	1,580 2.4
From Marquette	918,187	709,804	I.	208,383 29.0
From Escanaba	1,346,358	1,426,876	D.	80,518 5.6
From St. Ignace	50,551	59,445	D.	8,894 15.7
Total	2,379,516	2,362,124	I.	17,392 0.7

In 1883 the last report was to Nov. 6, having closed about two weeks earlier than this year.

Of the Marquette shipments 667,321 tons were brought down over the Marquette, Houghton & Ontonagon, and 250,866 tons over the Marquette & Western road. Of the Escanaba shipments 465,551 tons were from the Marquette District, and 880,807 tons from the Menominee District. Besides the ore shipped by lake, 29,707 tons are reported delivered to local furnaces.

Shipments of pig iron by lake were: Marquette, 8,480; Escanaba, 4,100; St. Ignace, 7,822; total, 20,402 tons.

Passenger Rates.

West-bound passenger rates from New York continue to be largely cut, but there is very little change at present in the situation. The rates are about the same as those reported last week, although the brokers' offices are selling tickets at almost any prices which the purchaser chooses to name. Charges have been made that the New York Central has been sending blocks of tickets to Chicago to be sold by brokers or scalpers.

The West Shore has resumed the selling of round-trip tickets at reduced rates, which was stopped for a while. The New York Central has also sold some of these tickets, although it is generally selling only single limited tickets.

The local fight between the Central and the West Shore continues with undiminished force, and the rates generally made to all local points on those roads are one cent per mile.

Western Passenger Rates.

At a meeting of general passenger agents in Cincinnati, Nov. 20, a resolution was passed to the effect that a general meeting of the roads west of the termini of the trunk lines and east of the Missouri River should be called, to be held in Chicago, Nov. 25, for the purpose of making an attempt to have the rates restored to full tariff. The call was largely responded to, thirty-three general passenger agents meeting in Chicago, Nov. 25. Mr. E. A. Ford, of the Pennsylvania Co., was chosen Chairman, and Mr. J. M. Hall, Secretary. The meeting was without special result, however, as nothing was done except to discuss the situation and to appoint a committee to draw up some plan by which the object of the meeting could be best served. Mr. C. P. Atmore, of the Louisville & Nashville, was made Chairman of the committee and another meeting will probably be held.

The cutting of rates between Chicago and Kansas City continues unabated, passengers being still carried between these cities for \$1, and the end of the war is not visible at present.

ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the Railroad Gazette:

Page.	Page.
Ala., N. O., Tex. & Pac. June	591
Allegheny Valley	551
Atchison, Top. & Santa Fe	504, 319
Atlanta & West Point	567
Baltimore & Ohio	531
Baltimore & Potomac	445
Boston & Albany	502
Boston, Concord & Montreal	411
Burlington, Cedar Rap. & No.	519
Camden & Atlantic	195
Canadian Pacific	519
Carolina Central	569
Central, or V. & Long Branch	419
Central Pacific	337, 603
Charlotte, Col. & Augusta	232
Charters	410
Chesapeake & Ohio Canal	445
Chicago & Alton	140
Chicago & Atlantic	801
Chicago & Rock Island	259, 318
Chi. & Eastern Illinois	583, 735
Chi., Milwaukee & St. Paul	87, 241
Chi. & Northwestern	284
Chi., Rock Island & Western	455, 511
Chi., St. Louis & Pittsburgh	293
Chi. & West Michigan	615
Cin., Hamilton & Dayton	535
Cin., Ind., St. L. & Chi.	751
Cin. & Muskingum Val.	410, 716
Cin., New Orleans & Tex. Pa.	104
Cin., Wash. & Baltimore	46, 445
Cincinnati, Reading & Western	578
Cleveland & Wheeling	512
Cleveland & Marietta	637
Cleveland & Pittsburgh	46
Columbia & Lake Erie	46
Columbus, Hocking V. & Tol	292
Concord	332
Connecticut River	64, 591
Delaware, Lack. & Western	451
Consolidated Coal Co.	221
Cumland Valley	259
Dea. & Hud. Ca. & P.	149, 249
Delaware, Lack. & Western	451
Del. Lack. & W. Leased Lines	535
Denver & Rio Grande	296
Detroit, Gd. Haven & Mil.	551
Detroit, Lansing & Northern	567
Eastern	818
Eastern R. R. Association	351
Eliz., Lexington & Big Sandy	375
Evansville & Terre Haute	391
Hebburg	47
F. Int. & Pere Marquette	567
Georgia Rail. ad.	631
Grand Rapids & Indiana	167
Grand Trunk	288, 716
Han. Junc. Han. & Gettysburg	427
Hartford & Conn. Western	165
Houston	100
Houston & Texas Central	211
Huntingdon & Broad Top Mt.	107
Illinois Central	164, 202
Indiana, Bloom. & West	515
International & Gr. Northern	357
Kansas City, Ft. Scott & Gif.	519
Kentucky Central	279
Knox & Lincoln	87
Lake Erie & Western	518
Lake Shore & Mich. Southern	358
Lehigh Coal and Navigation Co.	147
Lehigh Valley	47, 139
Little Rock & Fort Smith	419
Louisville, Evans. & St. L.	512
Louisville & Nashville	602, 735
Marquette & Houghton Ont.	293
Memphis & Charleston	727
Mexican Central	279
Michigan Central	359
Milwaukee, Lake Sh. & West	279

Memphis & Charleston.

This company owns a line from Memphis, Tenn., to Stevenson, Ala., 272 miles, with branches from Moscow to Somerville, Tenn., 13 miles, and from Tusculum to Florence, Ala., 7 miles; it leases the use of the Nashville, Chattanooga & St. Louis track from Stevenson to Chattanooga, Tenn., 38 miles, making 292 miles owned and 330 miles worked.

The road is leased to the East Tennessee, Virginia & Georgia Co., for its net earnings, but its operations are reported separately

The funded debt consists of \$4,000 old first-mortgage bonds; \$1,654,000 first and second extension bonds; \$600,000 second-mortgage bonds; \$1,400,000 first-mortgage Tennessee Division bonds, and \$884,000 consolidated bonds. The traffic for the year was as follows:

Train miles:	
Passenger.....	533,127
Freight.....	527,040
Service and switching.....	112,278
Total.....	1,172,445
Mileage of passenger-train cars.....	2,087,184
freight cars.....	8,217,251
Passengers carried.....	370,063
Passenger miles.....	17,364,755
Tons freight carried.....	733,438
Ton-miles.....	51,920,335

The cotton movement was 211,927 bales, a decrease of 43,848 bales, or 17.5 per cent., from the previous year. Of the freight car mileage 25.8 per cent. was of empty cars. The average train load was 32½ passengers, or 98½ tons of freight.

Locomotive service cost 19.482 cents per mile run. Maintenance of cars cost 1.561 cents per passenger-car mile and 0.484 cents per freight-car mile.

The earnings for the year were as follows:

1883-84.	1882-83.	Inc. or Dec.	P. c.
Freight.....	\$844,042	\$714,286	I. 129.756
Passage.....	476,158	438,144	I. 38,014
Mail and express.....	48,507	47,473	I. 1,034
Miscellaneous.....	25,313	36,120	D. 10,807
Total.....	\$1,394,020	\$1,236,023	I. 157,997
Expenses.....	958,109	845,498	I. 112,611
Net earnings.....	\$435,911	\$390,525	I. 45,386
Gross earn. p. mile.....	4.224	3.745	I. 479
Net earn. p. mile.....	1.321	1.183	I. 138
Per cent. of exps.....	68.70	68.40	I. 0.30

The increase in gross earnings was large, and there was also a large increase in the net earnings. The increase in expenses was due to causes noted below.

The working expenses last year were divided as follows:

	Amount.	Per mile of road.	Per train mile.
Conducting transportation.....	\$299,692	\$908	28.244 cts.
Motive power.....	228,689	693	21.552 "
Maintenance of cars.....	72,067	221	6.876 "
Maintenance of way.....	240,944	730	22.707 "
General expenses.....	115,817	351	10.915 "
Total.....	\$958,109	\$2,903	90.294 cts.

The earnings and expenses per revenue train mile, in both freight and passenger service, were as follows, last year, in cents:

	Pass. trains.	Freight trains.	All trains.
Earnings.....	98.411	159.874	128.993
Expenses.....	79.484	101.212	90.294
Net earnings.....	18.927	58.662	38.699

The increase in working expenses is fully accounted for by the fact that in 1882-83, for steel rail and fastenings, there was spent but \$3,015; whereas last year \$151,008 have been spent in this item alone. In addition to the above, and included in operating expenses, there has been expended the sum of \$34,294, properly chargeable to betterments. The result of the year was as follows:

Net earnings, as above.....	\$435,911
Interest on bonded debt.....	\$310,080
floating debt.....	38,920
Balance.....	354,700
Total.....	\$81,211

During the year 2,802 tons of steel rail and 71,968 new ties were used in renewals. There are now 143 miles laid with steel rails, 129 miles with iron fish-bar rails and 20 miles with iron chair rails. There were 2½ miles ballasted with crushed rock, making 207½ miles of the road now ballasted. Bridges and trestles have been improved and one span of new bridge built. Four new stations were built and other improvements made, and temporary shops built at Memphis to replace those burned down last March. There are now 28½ miles of sidings.

The President, Gen. Samuel Thomas, remarks that large additions have been made to the company's motive power and rolling stock, under the car trust lease authorized to be made at the last annual meeting. Additional freight cars are now being built for the company under said lease.

He calls attention to the improved physical condition of the property, and especially to the amount of steel rails now in the track. In view of the present low price of steel rails, and the greater economy and safety with which a good track can be operated, the substitution of steel for old iron rails should be continued as speedily as the means of the company will permit, until the entire main track shall have been laid with steel.

The increase in the company's gross revenues during the last fiscal year amounted to about 12.7 per cent. of the revenue of the previous year. This result was attained notwithstanding the fact that the company has as yet failed to derive the full benefits from the completion of the Kansas City, Fort Scott & Gulf Railroad. That road was opened for traffic Oct. 22, 1883, but, owing to floods in the Mississippi Valley, its operation had to be suspended Jan. 29, 1884, and it was not until April 9, 1884, that it could be fully resumed.

Old Colony.

This company's lines cover the whole of Southeastern Massachusetts, and extend to the west and north of Boston as far as Fitchburg and Lowell, the company now operating a greater mileage than any other in Massachusetts. They are as follows:

	Miles.
Boston to Newport, R. I.....	67.79
South Braintree by Middleboro to Somerset Junction.....	37.60
South Braintree to Plymouth.....	25.94
Braintree by Cohasset to Kingston.....	32.36
Cape Cod Line, Middleboro to Provincetown.....	85.77
Nine short branches and connections.....	55.79

Northern Division:	
Fitchburg to New Bedford.....	91.02
Fairhaven to Tremont.....	15.17
Seven short branches and connections.....	19.14

Total owned.....	430.58
Framingham & Lowell, leased.....	26.12
Fall River Railroad, leased.....	12.00
Total worked.....	468.70

This company also owns the Fall River, Warren & Providence road, 5.79 miles, worked separately; trains from its Fitchburg line run over the Boston & Albany track from South Framingham to Boston. It owns a controlling interest in the Old Colony Steamboat Co., whose lines run from Fall River and Newport to New York, and a large interest in the Nantucket & Cape Cod Steamboat Co. The report is

for the year ending Sept. 30 last, during which there was no increase of mileage.

The equipment consists of 125 locomotives; 235 passenger and 40 baggage cars; 4 milk, 8 hay, 911 box, 38 stock, 654 flat, 70 six-wheel stone, 1,200 coal and 87 caboose cars; 6 derrick, 4 scraper, 4 tool, 100 gravel and 8 other service cars.

The general account, condensed, is as follows:

Stock.....	\$10,442,800
B. C. F. & N. B. stock unconverted.....	5,820
Bonds.....	9,044,100
Bills payable.....	485,358
Accounts and balances.....	580,960
Improvement account.....	100,853
Surplus.....	702,516
Total.....	\$21,482,407
Real estate and equipment.....	\$18,698,613
Stock of Old Colony Steamboat Co.....	725,530
" Nantucket & Cape Cod Co.....	15,341
Stocks and bonds of railroads owned.....	628,221
Real estate.....	286,088
Materials.....	413,067
Bills and accounts receivable.....	517,240
Cash.....	197,431
Total.....	\$21,482,407

Stock was increased during the year by the conversion of \$20,000 Boston, Clinton, Fitchburg & New Bedford stock, and the sale of \$200,000 new stock. The bonds are all plain bonds, lot mortgage; there are \$2,583,900 at 7 per cent., \$3,719,700 at 6 per cent., \$1,913,500 at 5 per cent., \$327,000 at 4½, and \$500,000 at 4 per cent., making the interest charge \$534,445 yearly.

The traffic for the year was as follows:

Train miles:	1883-84.	1882-83.	Inc. or Dec.	P. c.
Passenger.....	1,629,344	1,575,254	I.	3.4
Freight.....	700,610	617,602	I.	12.8
Other.....	695,020	539,337	I.	28.9
Total.....	3,129,974	2,732,193	I.	14.3
Passengers carried.....	7,820,501	7,144,651	I.	9.5
Passenger-miles.....	116,745,901	104,989,238	I.	11.2
Tons freight car'd.....	1,597,048	1,626,500	D.	1.8
Ton-miles.....	57,899,872	57,915,789	D.	15.917
At train load:				
Passengers, No.....	71.6	67.0	I.	4.6
Freight, tons.....	72.4	63.0	I.	9.4

Of the passenger-miles, 18.7 per cent., and of the ton-miles, 47.7 per cent., were of business to or from other roads.

The earnings for the year were as follows:

1883-84.	1882-83.	Inc. or Dec.	P. c.
Passengers.....	\$2,188,197	\$2,173,908	I. 14,199
Freight.....	1,741,860	1,533,203	I. 134,133
Mail, etc.....	104,538	151,770	D. 47,232
Rents and miscellaneous.....	97,277	90,202	I. 7,075
Total.....	\$4,101,872	\$4,249,179	D. 147,307
Expenses.....	2,895,360	3,020,738	D. 125,360
Net earnings.....	\$1,206,512	\$1,228,441	D. 21,929
Gross earn. p. mile.....	8.094	8.006	D. 1.1
Net.....	2.706	2.621	I. 143
Per cent. of exps.....	69.30	71.09	D. 1.79

Expenses include taxes, which were \$199,203 last year, against \$161,060 for the previous year. This increase in taxes is chiefly due to the increased rate of taxation in the state, and to the increased market value of the stock upon which the tax is assessed. In the year 1884 the tax was nearly 2 per cent. upon the stock, and absorbs more than 20 per cent. of the net income.

The result of the year was as follows:

Net earnings as above.....	\$1,206,512
Interest accrued.....	\$550,860
Less interest and dividends received.....	68,098
Balance of interest account.....	\$487,868
Rentals paid.....	46,614
Dividends, 7 per cent.....	723,989
Surplus, credited to improvement account.....	\$38,032

During the year the second track has been extended on the old line from Campello to Bridgewater, and work has been done on the extension to Middleboro, and also between Weir Junction and Middleboro Junction.

Seven new locomotives have been added to the equipment, in place of two old ones condemned. Seven new passenger cars, two new parlor cars, one new baggage car and seven freight cars have been purchased or built. Four thousand tons of steel rail and 184,327 new ties have been laid in the track. Contracts have been made for 7,000 tons of rails at a cost of less than \$30 per ton delivered on the road. The first steel rails laid on the road in 1885 cost \$194.84 per ton. Of those contracted for about 2,000 tons will be needed for the second tracks, and the remaining 5,000 tons will replace iron rails to be taken up. This will leave only about 60 miles of railroad in the whole system with iron rails, being the Cape Cod Division below Yarmouth. The directors have also contracted for the purchase of five locomotives and four passenger cars. The charges to construction account for the year have been \$346,467, the chief item being \$320,264 for second tracks.

The improvement fund received \$80,659 premiums and \$38,032 from earnings, which, added to the balance from previous year, made a total of \$209,762. Expenditures from this fund were \$48,919, leaving a balance of \$160,853 on hand.

New stations have been built at Sea View, and are being built at Neponset, Southboro, Milton and Huntington Heights. A new and beautiful station at North Easton has been presented to the company by the Hon. Frederick L. Ames.

Under the authority given by the stockholders, the directors have sold in the past year \$500,000 of 4 per cent. 20-year bonds at par. A note of the Boston, Clinton, Fitchburg & New Bedford Railroad Co. for \$75,000 became due and has been paid; \$393,000 of bonds of the Agricultural Branch, and \$32,000 of bonds of the Old Colony Co. also matured and have been paid as far as presented. Old notes of the Old Colony Co., amounting to \$44,255 have also been paid. All the remaining notes payable (except \$6,360, which constitutes the present floating debt) have many years to run. In February, \$100,000 of bonds issued by the Mansfield & Framingham Railroad Co. will become due. On April 18 last 2,000 shares of capital stock were sold for \$280,659. Of this amount, the premium, \$80,659, was credited to the improvement account. The balance was used to pay for the new construction of the year. For meeting bonds that will mature in February and for extending the second track the directors ask authority to issue not exceeding \$500,000 of bonds at a rate of interest not exceeding 6 per cent.

The report says: "At the special meeting of the company, held May 13, 1884, the stockholders voted to consolidate with the Lowell & Framingham Railroad Co. In accordance with this vote, nearly all the shares of preferred and common stock of the Lowell & Framingham Co. have been surrendered to William J. Rotch and Frederick L. Ames, as trustees, for which the certificates provided by the contract have been issued, to be exchanged for certificates of stock in this company when the consolidation is effected. The contract for consolidation also provides for the issue, for a limited time, of 4½ per cent. 20-year bonds of this com-

pany in exchange for the mortgage bonds of the Framingham & Lowell Co. To the date of this report, \$127,000 of bonds have been issued. It is hoped that but few more will be called for under the terms of the contract. All expenditures made during the year on account of the Lowell & Framingham Co., including interest on the bonds, have been charged in the accounts as rental paid. The amount for the year is \$32,848. The interest on the bonds, while a lien on the railroad, is not a legal claim against this company, but has been paid this year. * * *

"The contract for operating the Union Freight Railroad expired on Jan. 1, 1884. Through the union with the Boston, Clinton, Fitchburg & New Bedford Co. a connection is now had with the northern railroads at Fitchburg and Lowell over our own tracks, and it was not deemed necessary to renew this contract, which has been but slightly remunerative. The Union Freight Railroad Co., in which this company owns one-half interest, now operates its own railroad. It is expected that fair dividends will be paid upon the stock owned by this company.

"The business with New York has been continued under the contracts made in 1880, and while diminished in amount has been fairly prosperous. The steamers 'Bristol' and 'Providence' have been substantially rebuilt and furnished with the electric light in the place of gas. The Old Colony Steamboat Co. has paid its usual dividend of 8 per cent., and has reduced its debt."

New York, Lake Erie & Western.

The annual report of this company, for the year ending Sept. 30 last, does not give any statement of mileage worked. The only addition noted, however, is a branch of 1½ miles, as given below. This would make the total road operated 1,692 miles, of which 1,074½ miles are included in the New York, Lake Erie & Western proper, and 587½ miles in the New York, Pennsylvania & Ohio.

The equipment includes 534 locomotives, of which 435 are standard and 149 of 6 ft. gauge; 270 passenger, 87 second-class and immigrant and 111 baggage, mail and express cars; 36 milk, 14,695 box, 1,592 stock, 237 oil-tank, 1,696 flat, 1,797 gondola, 9,655 coal and 224 caboose cars; 35 derrick and tool and 40 gravel cars.

The equipment of the New York, Pennsylvania & Ohio road consists of 221 locomotives; 61 passenger, 42 second-class and immigrant and 45 baggage, mail and express cars, 3,516 box, 500 stock, 418 flat, 3,099 coal and 126 caboose cars; 14 derrick and tool cars.

The general account, somewhat condensed, is as follows:

	1884.	1883.
Common stock issued.....	\$77,192,100	\$77,150,600
Preferred stock.....	8,140,800	8,134,800
Funded debt.....	75,238,485	75,267,137
Loans and bills payable.....	5,308,951	707,634
Interest due and accrued.....	2,288,961	1,292,007
Preferred stock dividends.....	7,096	4,524
Rentals of leased lines.....	410,846	469,850
N. Y., Penn. & Ohio rental.....	327,095	327,160
Payrolls and audited vouchers.....	2,814,356	2,749,888
Traffic balances, etc.....	768,050	1,236,088
Assessments on stock, Erie Ry. Co.....	2,907,714	2,907,714
Interest, exchange, etc.....	376,738	376,738
Sinking fund, reorg. first lien bonds.....	100,000	100,000
Profit and loss.....	5,903,043	7,120,354
Total.....	\$179,815,587	\$178,080,495

	1884.	1883.
Estate of Erie Railway Co.....	\$150,547,676	\$150,311,883
Construction and additions to property.....	15,692,665	13,853,085
Total road and equipment.....	\$166,240,341	\$164,164,968
Materials and supplies on hand.....	897,898	1,596,228
Stocks and bonds of other companies.....	3,279,135	3,203,472
Due from agents, other companies, etc.....	2,688,054	3,284,784
N. Y., L. E. & W. Coal & R. R. Co., advances.....	1,910,999	1,724,547
N. Y., L. E. & W. Dock & Imp. Co., advances.....	434,649	427,624
N. Y., Pa. & O., permanent improvements.....	93,220
N. Y., Pa. & O., construction.....	610,137	46,749
Chicago & Atlantic Co., advances.....	1,000,226	1,254,250
Advances to other companies.....	1,174,244	1,014,080
Cash.....	355,119	333,360
Bills receivable.....	59,647	34,067
Marine National Bank.....	150,994
Discount on common stock.....	299,675	299,675
Discount on bonds.....	476,163	476,163
Expenses extending 3rd mort. bonds.....	194,080	218,340
Total.....	\$179,815,587	\$178,080,495

There is \$391,700 common and \$15,900 preferred stock held subject to exchange for stock. The company has on hand, subject to sale, \$416,200 common and \$380,200 preferred stock. The total amount of stock authorized is thus made \$86,536,900, of which there is \$78,000,000 common stock and \$8,536,900 preferred stock.

The funded debt of the company is as follows:

First-mortgage, 7½ per cent., 1897.....	\$71,000
Second mortgage, 5 per cent., 1919.....	2,411,000
Third-mortgage, 4½ per cent., 1923.....	2,140,000
Fourth-mortgage, 5 per cent., 1920.....	4,018,000
Fifth-mortgage, 7 per cent., 1888.....	2,926,060
Buffalo Branch, 7 per cent., 1891.....	709,500
First consolidated, 7 per cent., 1920.....	182,600
Second consolidated, 6 per cent., 1909.....	19,890,000
First con. funded coupons, 7 per cent., 1920.....	25,000,000
Second con. funded coupons, 6 per cent., 1908.....	3,705,997
Reorganization first lien bonds, 6 per cent., 1908.....	8,567,400
Collateral trust bonds, 6 per cent., 1922.....	2,500,000
Income bonds, 1977.....	5,000,000
Total.....	\$75,268,485

The interest charge for 1884 is \$4,605,487, not including the income bonds. The only change during the year was the issue of \$1,348 funded interest on \$6,000 first-consolidated bonds assigned to the reorganization during the year. There are now only \$162,000 of these bonds unassigned.

TRAFFIC.

The train mileage on the Erie Railroad property (not including the New York, Pennsylvania & Ohio), with the earnings per train-mile, were as follows:

1883-84.	1882-83.	Inc. or Dec.	P. c.
Passenger.....	3,791,414	3,632,100	I. 129.344
Freight.....	7,513,873	8,724,801	D. 1,210,928
Switching.....	2,703,674	2,064,080	D. 391,000
Other.....	71,392	151,565	D. 80,173
Total.....	14,080,353	15,443,146	D. 1,362,793
Earn. per pass.-tr. mile.....	\$1.13	\$1.30	D. \$0.17
Ex. per pass.-tr. mile.....	0.73	0.83	D. 0.10
Net per pass.-tr. mile.....	\$0.40	\$0.47	D. \$0.07
Earn. per fr.-tr. mile.....	1.72	1.78	D. 0.06
Ex. per fr.-tr. mile.....	1.24	1.21	I. 0.03
Net per fr.-tr. mile.....	\$0.48	\$0.57	D. \$0.09

The traffic carried (not including 709,484 tons of coal and supplies for the company's use) was as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. C.
Passengers carried.....	5,785,069	5,815,811	D. 30,742	7.4
Passenger miles.....	169,599,255	200,256,758	D. 30,742,511	15.4
Tons general freight.....	4,666,619	5,384,070	D. 688,051	12.8
Freight ton-miles.....	1,118,706,492	1,338,067,322	D. 220,190,830	18.5
Tons coal.....	6,376,319	6,586,829	D. 206,501	3.1
Coal ton-miles.....	676,189,027	640,491,106	I. 35,698,921	5.6
Total tons freight.....	11,071,938	11,965,480	D. 893,532	7.5
Total ton-miles.....	1,794,946,519	1,979,148,428	D. 184,501,909	9.3

The average passenger journey last year was 34 miles, and the average freight haul 165 miles, against 31½ and 162 miles in the preceding year.

The earnings and expenses per unit of traffic were, in cents:

	—Passenger-mile.—	—Ton-mile.—
Earnings.....	1884. 1883.	1884. 1883.
Expenses.....	2.168 2.064	0.719 0.786
Net.....	1.622 1.524	0.519 0.532
	0.546 0.540	0.200 0.254

The average rate per ton-mile last year on general freight was 0.746; on coal, 0.674; on all freight, 0.719. The decrease in the general freight rate was 0.054 cent, or 6.8 per cent.; on coal, 0.084 cent, or 11.1 per cent.; on all freight, 0.067 cent, or 8.5 per cent.

EARNINGS.

The earnings of the New York, Lake Erie & Western road proper were:

	1883-84.	1882-83.	Inc. or Dec.	P. C.
General freight.....	\$8,348,414	\$10,706,208	D. \$2,357,794	22.0
Coal.....	4,554,743	4,855,933	D. 301,194	6.2
Passengers.....	3,076,057	4,134,971	D. 1,058,914	25.6
Mail and express.....	617,371	625,917	D. 8,546	1.4
Miscellaneous.....	300,677	275,543	I. 25,134	9.1
Freight pools.....	121,115	—	I. 121,115	—
Total.....	\$17,618,977	\$20,598,572	D. \$2,979,595	14.5
Expenses.....	12,069,338	13,578,709	D. 1,509,362	11.1
Net earnings.....	\$5,549,639	\$7,019,872	D. \$1,470,233	20.9
Gross earn. per mile.....	16.390	19.197	D. 2.807	14.8
Net.....	5.167	6.542	D. 1.380	21.1
Per cent. of exps.....	65.92	68.50	D. 2.58	—

The general statement of the result of the year was as follows, the earnings given including 68 per cent. of the gross earnings of the leased New York, Pennsylvania & Ohio, and the expenses including all the working expenses of that road:

Gross earnings.....	\$21,637,435
Expenses.....	16,358,078
Net earnings from traffic.....	\$5,279,357
Earnings from other sources (ferries, etc.).....	1,077,636
Total income.....	\$6,356,993
Interest, rentals and other charges.....	5,375,736
Balance.....	\$981,247
Interest on second consolidated bonds.....	1,679,870
Deficit for the year.....	\$698,623

No comparisons are made between this statement and that of the previous year, for the reason that in 1882-83 the New York, Pennsylvania & Ohio road was worked only for five months of the fiscal year.

The decrease in freight earnings was in part due to a loss in traffic, and in part to lower rates prevailing on the business actually obtained.

The profit and loss account for the year is as follows:

Balance, surplus, from 1st report.....	\$7,120,354
Interest on income bonds, 6 per cent.....	\$30,480
Dividend on preferred stock, 6 per cent.....	488,208
Deficit for the year.....	698,623
	1,217,311

Surplus, Sept. 30, 1884.....\$5,903,043

The interest on income bonds and the dividend on preferred stock were paid Nov. 27, 1883, and were for the year ending Sept. 30, 1883.

NEW YORK, PENNSYLVANIA & OHIO.

The traffic of the leased line for the year was as follows:

Passengers carried.....	1,348,376
Passenger miles.....	65,505,813
Tons general freight carried.....	3,650,649
Freight ton-miles.....	588,282,206
Tons coal carried.....	1,497,011
Coal ton-miles.....	115,660,251

The average train load was 43 passengers or 165 tons of freight. The average passenger journey was 48½ miles; the average freight haul, 136 miles.

The tonnage given above does not include 349,013 tons of coal and other supplies for the use of the road, making the total freight moved 5,496,673 tons.

The earnings and expenses per train-mile and per unit of traffic were, in cents:

	Passenger.	Freight.
Earnings per train-mile.....	103.000	99.000
Expenses.....	63.000	78.000
Net earnings.....	42.000	21.000
Earnings per passenger or ton mile.....	2.243	0.600
Expenses.....	1.475	0.472
Net per passenger or ton mile.....	0.768	0.128

The earnings per ton-mile on general freight were 0.567 cent; on coal, 0.763 cent; average for all, 0.600 cent. The train mileage was: Passenger, 1,533,423; freight, 4,253,872; other, 1,154,809; total, 6,942,104 miles.

The earnings of this road, with the proportion (68 per cent.) accruing to the lessee, were as follows:

	Total.	Lessee's proportion.
Freight.....	\$3,388,107	\$2,269,913
Coal.....	882,258	599,935
Passengers.....	1,469,433	999,215
Mail and express.....	144,021	97,934
Miscellaneous.....	75,679	51,462
Total.....	\$5,909,498	\$4,018,459
Expenses.....	4,288,740	—
Net earnings.....	\$1,620,758	—
Deficit to the lessee.....	—	\$270,281

The earnings were \$10,500 gross and \$2,757 net per mile. The expenses were 72.57 per cent. The surplus for the five months, May 1-Sept. 30, 1883, was \$190,540, so that the total loss to the lessee up to Sept. 30, 1884, has been \$70,741.

IMPROVEMENTS OF ROAD.

The Vice-President reports that the only addition made to the lines during the year was a branch built from the Erie breaker track which connects with the Delaware & Hudson road, 2½ miles south of Carbondale, to the Edgerton breaker,

a distance of 1½ miles, under an agreement securing to the company transportation of the coal from the breaker. The company has furnished 12 miles of iron rails with the necessary fastenings, for the purpose of laying a branch from its track at Bradford, Pa., to the bark and timber lands of Hoyt Bros. Six miles of this is laid on the company's right of way and will remain permanently. The rest will be used for lateral branches to outlying properties.

The expenditures during the year for second track, new sidings, taking up third rail, etc., are \$277,437. The second track was laid on the Jefferson Branch and on the Niagara Falls Branch, the latter being required to provide for the accommodation of the West Shore trains which use that part of the road by agreement.

The third rail has been removed from the main track on the Eastern Division, leaving only the Delaware Division and the Paterson and Jersey City yards with the third rail on which to wear out the broad-gauge locomotives. The expenditures for car equipment amounted to \$1,477,716, which included 25 passenger cars, 15 cabooses, purchased or built, and the payments on car trusts on 400 gondola and 3,000 box cars which were charged to equipment account when the payments were finally completed and the title vested in this company. Payments during the year for locomotives amounted to \$223,562, which included 10 locomotives built by the company, final payments on 10 locomotives purchased, and the narrow-gauging of 24 old locomotives.

The total amount charged to construction and equipment during the year was \$2,162,635, from which is to be deducted \$95,696 received for real estate, leaving a balance of \$2,066,939 as the total charged to construction accounts.

The expenditures for permanent betterments of the New York, Pennsylvania & Ohio road during the year were \$243,007, the principal charges being for the extensions, sidings, water and coaling stations, new passenger and freight houses at several stations. There were also 1,904 lineal feet of iron truss bridges erected on this road, at a cost of \$70,118, which has been charged to expenses.

FINANCIAL.

President Jewett's report refers at some length to the failure to pay interest on the second consolidated mortgage bonds in June. This was considered wise by the board of directors in view of the condition of the affairs of the company, and was expressly provided for in the agreement of re-organization, in which it was provided that no proceedings could be taken to enforce the payment of interest on the second consolidated mortgage until six successive coupons should be in default. He expects that, with the revival of business and restoration of rates, the company will be able to pay all the fixed charges, including arrears of interest.

The President says that the total amount paid under car trusts, for equipment, including interest, has been \$6,808,398. There is still to be paid from October, 1884, to May, 1892, \$5,666,000 principal and \$1,255,380, the payments on the principal gradually decreasing from \$876,000 due in 1885, to \$260,000 in 1892, when the final payment under the present trusts will be made.

The object and purpose of securing control of the Cincinnati, Hamilton & Dayton, and the Chicago & Atlantic roads have been fully stated in the previous reports. The Cincinnati, Hamilton & Dayton road has been a self-sustaining organization, and in all probability will continue so. The Chicago & Atlantic road was completed and opened for through business about May 1, 1883, and has been of very great advantage to this company and its leased line, as without these connections the company would be absolutely dependent upon other and competing lines for a large part of its business. The Chicago & Atlantic has been obliged to rely entirely upon through business, not being prepared to do the local traffic for which it is well placed. In consequence of this and of the disorganized condition of business and rates, it has been necessary to advance to that company much larger amounts of money than was expected. In order to provide the necessary means a second mortgage was put upon the road, securing bonds to the extent of \$5,000,000. Negotiations were entered upon with different parties for their sale and the firm of Grant & Ward offered to purchase the entire issue at 90 per cent., which was 15 per cent. above that offered by any other parties. The firm was then in good standing and engaged in large financial transactions. A delay, however, caused by the necessity of re-engraving the bonds in order to meet the requirements on the Stock Exchange, made a change in this arrangement necessary on account of the depression of business. The agreement was changed from an absolute sale to a temporary loan and conditional sale, and to a reduction of the amount of bonds to be placed with Grant & Ward from \$5,000,000 to \$2,500,000. Upon this amount they agreed to advance \$1,500,000 upon notes to run four months, which were to be returned canceled at the end of that time, and to carry the loan for the full period of one year, during which time they represented their ability to dispose of the bonds at the price agreed upon, retaining from the proceeds the money advanced and accounting for the balance of the proceeds. Before the four months expired, however, the firm suspended, and it was then discovered that they had used the bonds in the meantime, as well as the notes given them, as above stated, to raise money for their own purposes.

The President continues, "The failure of the firm was a misfortune to the Chicago & Atlantic Co. It was unfortunate for this company, because of the effect it might have upon its credit. It was made more unfortunate, however, by the unwise and injudicious conduct of those from whom this company, in the emergency, had every reason to expect aid rather than embarrassment.

"Your company could lose nothing by the transaction, even if it were obliged to redeem its notes at their face value, because it had already received into its treasury the entire proceeds thereof, amounting to \$1,500,000, and had credited that amount upon the advances to the Chicago & Atlantic Co. If, therefore, the necessity arose for it to redeem its notes, the effect would be simply to reinstate the relation to the Chicago & Atlantic which existed previous to the negotiation. The only damage which could result to it would be the effect which the failure might have upon its credit.

"The loss in the transaction, of necessity, fell upon the Chicago & Atlantic Co., but the extent of this anticipated loss was being limited, by negotiations which were at once entered into, for reclaiming not only the notes given to Grant & Ward, but also a considerable number of the bonds of the Chicago & Atlantic Co., which they had used in connection therewith.

"The failure did affect, to some extent, the credit of your company, but as the facts connected with it became known, this effect was rapidly passing away.

"About this time parties in London not claiming to have more than a small interest in the company, began indulging in the most serious charges against it and the integrity of its management, seeking to throw upon the latter the responsibility for the failure of Grant & Ward, for the demoralized financial and business interests of the country, and for the resulting effect of such a state of affairs upon the railroads generally and upon your company in particular. In due time, these same parties succeeded in

getting a public meeting held in London to discuss the situation, and in securing the selection of themselves as a committee to visit this country on a tour of investigation.

"This Committee, after its arrival in New York, without inquiry of sources from which facts could be obtained, or without giving credence to facts when stated to them, circulated the most serious and unfavorable comments upon the company, its condition, its ability to meet its obligations, the danger of legal proceedings, etc., all of which more seriously impaired and injured the credit of the company than the failure of Grant and & Ward or, indeed, any two such failures would have done, had they taken place.

"During this period the company had not only to contend with the difficulties involved in the condition of the general business of the country, the demoralized condition of the railroad interests, and the sharp and destructive competition between the roads, but with the effect of such visit and the comments made, as the public supposed (and as it had a right to suppose), with some degree of authority.

"The company, in the process of its various improvements had incurred a limited indebtedness, which was fully secured by collateral deposits with the parties who held its obligations. It had the ordinary current debts for supplies, labor, and other items, which, when added to the bills payable and to the loans secured as above stated, amounted to between four and five millions of dollars, all of which the committee designated as 'floating debt,' and they undertook to relieve the company from the embarrassment arising from their visit by agreeing to raise the money necessary to pay such debt; stipulating, however, that in view of the determination of the executive of the company to retire from the service, his successor should be such person as might be satisfactory to them, they, at the same time, naming the gentleman whom they would prefer as such successor.

"It was under this pledge that my successor (who asserted unqualifiedly—and no doubt at the time with entire sincerity—that he would not become connected with the management without such a guaranty as to money for paying this debt) was proposed to the board as the preference of the committee, and it was under such circumstances and conditions that he now occupies the position he does in the company's service.

"The steps necessary on the part of the board to accomplish this change had, however, hardly been entered upon, when it became an acknowledged fact that the English Committee, who had agreed to furnish the money for the considerations before stated, were either unwilling or unable to do so, and that their programme for the company's relief was, to that extent at least, a failure.

"Subsequently, three gentlemen in this city, of known financial ability, proffered to assume to a certain extent, if no further, the obligations of the English Committee, provided that the gentleman named by the committee as successor to the executive be chosen, which proffer was accepted by the board of directors.

"It is to be hoped they will make good their assurances, and that the arrangement will prove a satisfactory and profitable one to the company."

CHANGES ON THE ROAD IN TEN YEARS.

President Jewett, in concluding his report, which he says is the last one which he shall have occasion to make on the affairs of this company, refers at considerable length to the changes and improvements which had been effected in the road and its equipment and general condition during the past 10 years. When he assumed the management of the company in 1874 its track was 6 ft. gauge, and it had but one connection of the same gauge with which it could exchange business without breaking bulk or transfer of car bodies. Of its 1,264 miles of main line and branches all were laid with iron rails, with the exception of 176 miles, and on the main line between Jersey City and Buffalo there were still 121 miles of single track. The yards were contracted and inconvenient. The accommodations for housing and repairing engines were entirely inadequate and the station buildings at some points were of a temporary character. Of the 325 bridges on the road, having a span of over 20 ft., only 45 were of iron. A large number of locomotives were of old patterns and in poor condition.

The work done since then includes the reducing of the gauge on the entire road from 6 ft. to the standard 4 ft. 8½ in.; the changing of 404 engines and 10,400 cars to the new gauge; the completion of the second track on the main line, and the laying of the main line and a large part of the branches with steel, so that less than 10 per cent. of the track is now of iron; the replacing of 272 wooden bridges with iron; the building of shops at Hornellsville and Buffalo and of engine-houses at several points; the re-arrangement of the shops at Susquehanna, and their supply with new tools; extensive additions to the tools in the various division shops; the construction of passenger stations of a permanent and suitable character at nearly all the more important towns on the road, and a great many minor improvements.

At the Jersey City terminus a ship basin has been built, with docks accommodating steamers of the largest size, and a grain elevator has been supplied. The yards have been re-arranged and facilities for handling properly the large business concentrated there. At Weehawken extensive additions have been made to the oil docks and the adjoining yards. On the New York side of the Hudson River two large freight piers have been built and an entirely new ferry-house and approaches to it. At Buffalo, extensive additions and improvements have been made in the terminal facilities and a joint interest acquired in the Buffalo Creek Railroad and its valuable terminal property and docks, while the yards in and about Buffalo have been remodeled and systematically arranged. In building the second track on the Buffalo Division the grades were reduced from 45 ft. per mile to 31 ft. west-bound and 26 ft. east-bound.

The chief addition to the company's railroad lines has been the road from the terminus of the Bradford Branch to Johnsonburg, 30 miles, and from Brockwayville to Daguerstown, 12 miles. These lines enable the company to reach its bituminous coal property in Pennsylvania with its own trains. These mines are now well opened and daily shipments of coal made therefrom.

During the 10 years the number of locomotives owned has been increased from 505 to 584, while of the original number 348 have been broken up and replaced with new ones, leaving a total of 427 locomotives added to the equipment or replacing the worn-out engines. These new ones include 183 of the consolidation pattern, which are very much more efficient than those of the classes replaced.

During the 10 years the car equipment has been increased in number from 13,569 to 31,081, the new passenger cars being very superior to the old ones then in service, while the new freight cars are generally of larger capacity than the old ones which they replace. The President says in conclusion: "By the improvements and extensions to which I have referred a system of roads has been organized which is assuming a strength as great as that of any of its competing systems, the organization of which and the improvement of the various branches owned have called for the exercise of skill, experience and great labor. But, like all other systems, its character and efficiency can be destroyed by an unwise and inexperienced management much more rapidly than it was built up."



Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

PASSES.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE NEW YORK, LAKE ERIE & WESTERN.

The New York, Lake Erie and Western annual report to the stock-holders appeared this year promptly at the date of annual meeting, last Tuesday, while it has usually come weeks and last year came months after the meeting, which heretofore has had presented to it only a brief summary of the chief facts in the last year's working. This new report is not only earlier but in a very important respect it is much more useful than the last one, because it makes a separate statement of the traffic, earnings and expenses of the Erie proper, while last year the figures included those of the New York, Pennsylvania & Ohio for the five months covered by the lease. This made a comparison with previous years valueless; but the new report, giving the figures for the Erie proper for the last two years, makes it possible again to follow the history of the business of the road continuously.

The company, after a season of comparative prosperity, which seemed, but a short time ago, likely to bring it soon beyond any serious financial danger, has in the last year again met misfortunes which seem likely to cause it serious trouble until there is again a return of general prosperity to the country. This means that the reorganization in 1877, and the measures taken by the new company to strengthen its position, have not proved successful; for a company that is able to go on paying its interest and rentals and other charges only when times are good cannot be called a successful one. Mr. Jewett retires after ten years of struggling against tremendous difficulties and complications, which not long ago seemed practically overcome, leaving his task, the establishment of the railroad company on a stable foundation, still uncompleted. When he took his place as President of the company in 1874 the task seemed almost hopeless; doubtless much has been accomplished, but his successor in 1884 still has before him a formidable task, especially if the depression in business, which was so marked a feature in the situation in 1874, shall last as long now as it did then.

Under these circumstances Mr. Jewett is hardly likely to get credit for what was actually accomplished in the ten years of his administration. He took a railroad which was far, far below the standard, even at that time, of the lines with which it had to compete, which could not afford as good service as they, and could perform the inferior service only at greater cost; he took it at a time when these other railroads by improvements in appliances and in management were rapidly reducing the cost of transportation—so rapidly that in a very short time, if similar progress were not made by the Erie, their cost of transportation would be so much less than its

that the rates which they could afford and would be compelled to make would be less than the bare expense on the Erie. He took it when the company could not hope to make profits without large expenditures of new capital, and when it was difficult for any company and almost impossible for the Erie to get new capital. He took it when it had few or no connections interested in contributing traffic to it rather than to its rivals, so that this fact and its own imperfections as a carrier kept its traffic stationary for years. The Erie gained but 80 millions of ton-miles (9 per cent.) from 1872 to 1876, while the New York Central gained 653 millions (66 per cent.), and the Pennsylvania 440 millions (87 per cent.).* In a word, he took a railroad which was doing bad work at high cost to itself and naturally gaining no business, while its rivals possessed most of the channels for securing traffic, which they were handling well at a low and constantly decreasing cost.

While the financial condition of the Erie road when Mr. Jewett leaves is by no means satisfactory, no one can say that the position of the property has not been immensely improved since he took charge. It has been, in fact, largely recreated. In the first place, it does good service at low cost to itself. The expense per ton per mile last year was 0.519 cent; per passenger mile, 1.022 cents; in 1874, 0.913 cent per ton-mile and 2.001 cents per passenger-mile. The average rates received this year were but 0.719 cent per ton-mile and 2.168 cents per passenger-mile, and if the expenses of doing work had been the same as in 1874, the working expenses would have been \$3,555,000 more than the total receipts. It is hard for people, and especially for Europeans, to understand the tremendous difference in the financial situation of railroad companies caused in this country both by the enormous and rapid reduction in the rates received and the similar great reduction in the cost of working. These changes have vitiated all calculations for the future. There has been nothing like them in any other country, and sufficient allowance for them is rarely made. How could one in 1874 calculate safely for the future when ten years from that time the average freight rate was to fall off 45 per cent.? On the Erie in that time the cost has been reduced no less than 43 per cent., and yet the profit per ton per mile has decreased from 0.398 to 0.200 cent per ton per mile, or nearly 50 per cent. In the face of this tremendous fall in the prices for transportation the vast improvements in economy of working and the great gains in traffic have alike failed to increase the profits of the road. The 1,047 millions of ton-miles carried in 1874 yielded a profit of about \$4,180,000; the 1,755 millions (68 per cent. more) carried in 1884 yielded a profit of but \$3,590,000, though the cost to the company of carrying the larger amount was but \$9,350,000, against \$9,550,000 for the smaller amount in 1874.

Now the expenditures by which new connections were secured, and by which in other ways through traffic was to be gained, must be judged by the facts as they existed when the expenditures were authorized and the reasonable prospect at that time, and not by the facts as they now exist, unless the present condition of things could reasonably have been anticipated. Two things have prevented the profit that was expected from these expenditures. Besides the reduction in rates, which has been mentioned (which had already made great progress when these enterprises were undertaken), there is the great multiplication of the railroads which compete for the through traffic. These have had something to do, and perhaps a great deal, with the reduction in rates, and they are, doubtless, the sole cause why the Erie's traffic last year, when first provided with the long desired connections under its own control, suffered an important decrease—16½ per cent. in freight other than coal, and 15½ per cent. in passengers. Any criticism of the management which fails to take into consideration these two facts, the great decrease in rates which has been going on for many years, which seemed arrested in 1880, but this year began again, and the sudden multiplication of the lines competing for the traffic between the East and West, will certainly be an unfair criticism. It may be possible to

prove now that some of the expenditures made to secure traffic were not warranted by the traffic and rates as they were in this last fiscal year, that the profit on the business gained has not paid for the charges incurred; but this is a valid criticism only if it can be shown that the diversion of traffic to new lines and the reduction in rates were reasonably to be expected. Still further, it will be necessary to face the situation as it would be if the Erie had not secured these tributaries. There would have been none the less the competition of the other new roads, and there can be little doubt that the decrease in traffic suffered last year would have been much larger than the large amount it actually was.

Compared with the previous year, the report for 1883-84 shows, for the Erie proper, a decrease of 15½ per cent. in passenger traffic, an increase of 5½ per cent. in coal, but a decrease of 16½ per cent. in other freight, resulting in a decrease of 9½ per cent. in total freight traffic. Then with a decrease in the average rates of 11½ per cent. on coal, and 6½ per cent. on other freight, and an increase of 5 per cent. in the average passenger rate (due doubtless to the smaller proportion of immigrant traffic), the gross earnings fell off from \$20,598,572 to \$17,618,976, or 14½ per cent., making them the smallest since 1879. And though the working expenses were reduced more than 11 per cent., the net earnings from the operation of the railroad fell from \$7,019,872 to \$5,549,639, or 21 per cent., the decrease amounting to \$1,470,233, making them also the smallest since 1879, and less than reported in 1872 or 1873. There was a profit on other undertakings, like ferries and elevators, some \$178,000 more than last year, but the New York, Pennsylvania & Ohio lease resulted in a loss of \$271,281, instead of a profit of \$199,540 the year before.

President Jewett in his report complains of injury to the credit of the company caused by the appointment of an investigating committee by London bondholders after the failure of Grant & Ward, and he gives an explanation of the company's relations with this firm which is, we believe, the first officially given by the company. It seems to us that if this explanation had been given at the time of the collapse of Grant & Ward, and when it was known that the Erie had suffered by it, it would have done more for the company's credit than any bondholders' investigation could have done against it. The facts that came out at the time of the failure showed that the active man of the firm was simply a great swindler, and little else was known of the firm by the public in this country, not to say London. It was not surprising, then, that people interested in the company there should be astonished and suspicious, and they were justified in seeking a full explanation when it was not volunteered. If it had been volunteered, probably there would have been less suspicion.

It was understood when arrangements were first made for Mr. King to succeed Mr. Jewett that the latter would remain in the board and be made its chairman. There has been a change in the programme, however, and Mr. Jewett retires from the board with 12 other of the 17 directors. It is substantially a new board which is now responsible for the management of the company, and it is understood that through it, and not through any English subscriptions, the means will be obtained to relieve it from its immediate financial difficulties. With a favorable turn in the business of the country its restoration to a reasonable prosperity, sufficient to enable it to meet its fixed charges, ought not to be difficult; but if the present condition of things, especially of through rates and the consumption of and freights on coal, continue long, the new board and its president will have no easy task.

DISREGARD OF SIGNALS.

During last week there have been several very painful accidents recorded, due to the utter disregard of instructions or of signals on the part of the train-men, more particularly of the engine-men. In one instance, the engine-man ran directly into the rear of the preceding train, after having passed two red signals which had been set automatically, having to all appearance made up his mind not to be stopped by anything short of a brakeman, who naturally failed to go back far enough with his flag. In another instance, an engine-man who had regularly, for months, made a certain stop to await and meet another train, which he could meet nowhere else, except upon the single track, pulled out without a sign from the conductor, and could not be stopped even by the bell-rope when the conductor found he was running away with him; but ran headlong into the train he was to have met at the side-track. We have been told that the employees at fault in these instances were as good as the average, in

* MILLIONS OF TON AND PASSENGER MILES.

Year.	Ton miles.			Pass. miles.		
	N. Y.	Can.	Penn.	N. Y.	Can.	Penn.
1871-72	851	1,021	1,190	148	319	174
1872-73	1,093	1,247	1,385	156	399	177
1873-74	1,047	1,362	1,373	165	351	175
1874-75	1,017	1,404	1,479	160	339	180
1875-76	1,040	1,674	1,630	155	353	288
1876-77	1,115	1,620	1,495	163	317	143
1877-78	1,225	2,043	1,732	171	300	142
1878-79	1,569	2,298	2,137	140	261	156
1879-80	1,721	2,525	2,298	149	331	197
1880-81	1,984	2,647	2,655	180	374	231
1881-82	1,974	2,395	2,880	200	432	240
1882-83	1,970	2,201	2,697	205	420	245
1883-84	1,705	170

the estimation of the officers of the road; and the engine-man who ran away with his conductor was certainly regarded as an unusually good and careful man. An acquaintance, who is a bridge-engineer, draws from these instances the conclusion that we ought to have some sort of a testing-machine for men, which by tension or torsion or scratching should be able to gain some idea of the firmness of the railroad employé's fibre, and so determine as to his fitness for his place; unfortunately, even after the employé has been satisfactorily through the test of continuous employment upon the same road for a long time, he will sometimes fail at a critical moment, as in the instances which we have cited. The first of these shows that the man had had no sufficient drill in the observation and obedience of signals; they are indeed in use over only a short portion of the division on which he runs. His disregard of them does not impeach the value of them, only his intelligence or observation—or eyesight. In the second instance, it is probable that if starting signals had been in use at the station where the train stopped, the engineer might have been reminded by the signal raised against him that he must not go yet. It is only upon probabilities that we can argue in such a case as this, which is of the most discouraging kind. Nevertheless, similar ones are recorded every month, and it is important to study them with the greatest care, since the real cause of them is obscure. For we take it that, as a general rule, employés are in earnest to do their duty, or at least willing to do it. We can not recall any recent instances where train-men have purposely caused a disaster. We remember to have been told the result of a very thorough investigation, in which it was determined to ascertain, if possible, the ulterior reason why an engine-man ran away with his train and caused a collision almost exactly similar in detail to the recent instance which we have cited above; that it was found that the engine-man's wife had deserted him for another man on the night previous to the morning of the catastrophe, and he had apparently been rendered oblivious of everything else by his agony of mind.

In this instance also, it may be presumed that the starting signal, if one had been in use, might have recalled the man to thoughts of his duty; for when men have become trained to observe and to obey signals, they certainly do acquire a habit of almost insensibly noticing them.

But in the absence of signals, which must be contended against upon the greater number of our railroads, and in the only partial equipment of those roads where they are most in use, the main reliance must after all be in the acquaintance of the division superintendent with his men, and in his very constant intercourse with them, both in the office and on the road. He cannot be too often upon the trains to observe their conduct in the little things which show whether they are carefully attentive to duty or negligent. We have been told by one of experience that he never in his life went over his division without finding more than one instance of neglect which required notice from him.

It is desirable, in this state of things, that the division superintendent should employ, or examine before they are employed, all new men. Now, as many of our important railroads are organized, this is simply impossible; the division superintendent has too much to do besides this, so that his attention is almost entirely diverted from it. The freight conductors are, very likely, taken into service by the train dispatcher; the conductor picks up his own brakemen; the engine-men are hired by the master mechanic and the firemen by the round-house foremen. The end is, that the superintendent is amazed to find, on near acquaintance, that the employés do not rate so near first-class as he could wish, or as he had supposed they did.

We are not of those who insist that all accidents will be avoided by the use of signals; but it has been demonstrated in practice that they do eliminate almost entirely certain classes of accidents; yet it can scarcely be expected that they will do so if the employés disregard them, as they will be apt to do, if bad or careless men to begin with, or if they are subject to little supervision and discipline. The doctrine which we wish to impress is this: that the two great needs of our railroads, with their constantly increasing traffic, is more signals and better discipline of the men. Even without improved discipline it is clear that the signals would prevent many disasters, because they would certainly generally be heeded, but they will not insure that immunity which should be expected, unless the men are carefully selected, well drilled and carefully observed, nor unless the system is extended so as to embrace more than a fragment of a division, for the most important characteristic required of signals is that they shall be uniform.

LACK OF SYMMETRY IN RAILS.

A correspondent in North Carolina has asked us if there is practically any such difference in the two sides of the ordinary T rail as make it necessary to lay the rails with one side uniformly on the outside or inside of the track. He had heard it said that there is a noticeable want of symmetry in the two sides of the rail, as it comes from the mill, which sometimes was ascribed to the wear of the rolls, and which makes it necessary to keep the branded side always on one side in laying the rails in track.

It might seem at first that this asserted lack of symmetry must be either an accident affecting a certain lot of rails, or even a pure delusion; but investigation shows that every experienced and observing trackman has found that of any lot of rails, iron or steel, almost every one, if laid with a certain one of its sides to the inside, or gauge side, of the track affords a better bearing for the tread of the wheel than it would if reversed.

If the rails are roll-stamped (with the name of the manufacturer and date of make), as railroad bars commonly are nowadays, he usually finds that the stamp serves as a quite certain indication of the side which, laid to the inside of the track, offers the better bearing surface to the wheel. He discovers, too, that while in rails of a certain make the stamped side is in almost every instance the one that should face the inside of the track, in rails from another mill the stamped side is the one to face the outside of the track. He may, in view of these conditions, reasonably conclude that, while hardly any individual rail is exactly symmetrical, the rails of any given lot are practically uniform as to cross section, and were he to reason the matter to the ultimate legitimately deducible inference from the observable facts in the case, he would hardly fail to arrive at the further conclusion, that the quality persistently asserting itself in the rails of any certain lot, in consequence of the existence of which he finds a necessity for selecting a side for laying to the flange of the wheel, is induced by some mode of handling to which the mill making that lot invariably subjects each rail of its product. One track-master, we know, having had his attention particularly called to the matter in question, arrived at the conclusion indicated; but he, we believe, until invited recently to discuss the subject, had satisfied himself with taking mental note of this peculiarity in the rails, carefully laying them in accordance with observed indications. This, indeed, seems to have been the practice of nearly every good road-master.

What now is the cause of this observed lack of symmetry? On a careful examination, by the eye alone, of a clean-cut cross-section of almost any rail, it will be seen that the sides of the head are not exactly similar; there is a want of "respective symmetry;" the contour of one side is not exactly like that of the other. But this condition does not necessarily affect the inclination, or pitch, of the surface of the rail that carries the tread of the wheel.

If we cut a rail across at a roll-stamp, and again midway between two roll-stamps, we find a lack of relative symmetry (between the two sides) at those points of section, respectively, similar in character to that noticed at the end of the rail; but find, further, that at the cut through the roll-stamp the lack of symmetry is greater than at the cut between roll-stamps. On carefully sighting the line of the whole rail, on either side or along the top, in many instances we find none of those lines to be straight, nor even regularly curvilinear, but sinuous or serpentine.

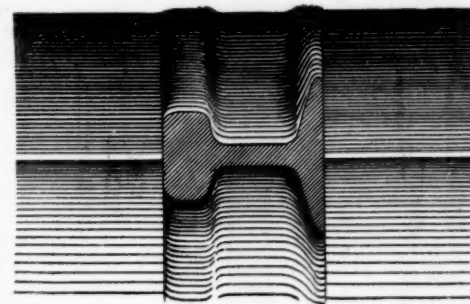
No person who has seen a rail "straightened" under the cam-motion machine, quite commonly used at rail-mills, is at a loss for a cause to which to refer this sinuosity, which sometimes nearly approaches angularity.

If, after having cut the rail into lengths, we butt the end of a cut made through a roll-stamp with the end of a cut made between roll-stamps, in most instances we find a noticeable lack of coincidence of the two ends in side contour, though the top surfaces of the heads coincide as well as in the case of butting the ends of two whole rails.

If, again, after cutting at a roll-stamp, and again at a point about 30 in. from it, we reverse the short piece so made and butt the reversed end of it with the end made by the first cut, we generally find a noticeable want of conformity between the two ends in the matter of inclination of wheel-tread-carrying surfaces.

There is not much variation in the contour of the top surfaces of a given lot of rails. Rails are, necessarily, rolled in a position relative to the rolls shown by the annexed diagram. The play of the rolls vertically does not much affect the shape of the top of the

tread of the rail, but such play does affect the shape of the side of the head and the thickness of the web of the rail. Any wear of the finishing roll would of course affect the shape of the rail turned out, but in view of the fact that any well managed mill turns out



several thousands of tons of rails of one pattern preserving an almost exact uniformity in weight per yard throughout the entire lot, we may reasonably conclude that in ordinary practice no roll is used after it has become worn to an extent sufficient to cause noticeable variations in shape of the product.

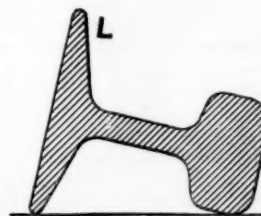
So the opinion, above quoted, "that the want of symmetry is referable to unequal wear in the rolls," seems to be not well founded.

In any mill the handling of every rail in its progress through the rolls, and thence to the cutting-off saws and thence to and along the cooling frame, is identical; except that when, because of imperfections in one or both of its ends, a rail is cut short of the "standard" length, the two cuts are not made simultaneously, as otherwise they would be.

The end of the rail first leaving the finishing-roll comes down upon the iron floor of the mill, touching the floor first with its head, and, propelled by the rolls "snooves" along, twisting itself somewhat as it goes, until finally it has its whole length on the floor, with its weight supported by one side of its head and the corresponding edge of its flange or foot. In this position it is hauled along the floor, or over fixed rollers, as the case may be, for a distance necessarily something greater than represented by its length, to the cutting-off carriage.

While undergoing this treatment the rail is, of course, at a very high heat, and has but little rigidity; and here presumably it takes on a lop-sidedness the effect of which we see when the rail comes to us to be placed in track.

Resting as described, and as shown in the diagram, the web bends and sinks somewhat, and the point *L* of the flange comes over somewhat toward the head.



No treatment thereafter received has any effect to remove the set thus taken.

Obviously a rail whose web has been thus bent will, when set up on its foot, have a "list," or leaning to the side *L*, and the table or crown of its head will have a pitch toward *L* directly referable to that "list" or leaning of the web.

Hence this rail laid with the side *L* to the inside of the track will offer to the tread of the wheel a broader, and therefore presumably better, bearing than it will if laid with the side *L* outward.

In each of the four sections herewith, which have been taken from actual rails, the side on which, presumably, the rail rested when delivered hot from the rolls is indicated by the line *B*.

In each case the web midway of its length settled slightly toward *B*, representing the floor, and the point *L* of the flange settled over toward the head. Furthermore the web bent slightly at its junction with the foot of the rail.

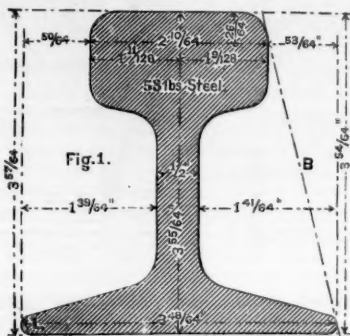
Hence when the rail comes to be set on its foot it is found to lean toward *L*, as indicated by the figures showing the distance from each side of the head and web, respectively, to a perpendicular erected on the corresponding side of the rail; and this notwithstanding the fact that the web is slightly curved, with its convexity toward *B*. In fig. 1, the leaning toward *L* is, practically, at the head $\frac{1}{8}$ in., and midway of web $\frac{1}{4}$ in. In fig. 2, the leaning at the head is $\frac{1}{4}$ in., and,

through some distortion of the rail, $\frac{1}{4}$ in. midway of web.

In fig. 3, the leaning at the head is $\frac{1}{4}$ in., and midway of web $\frac{1}{4}$ in.

In fig. 4 the leaning at the thread is equivalent to $\frac{1}{4}$ in. and at middle of web $\frac{1}{4}$ in. The heads are of course "pitched" correspondingly.

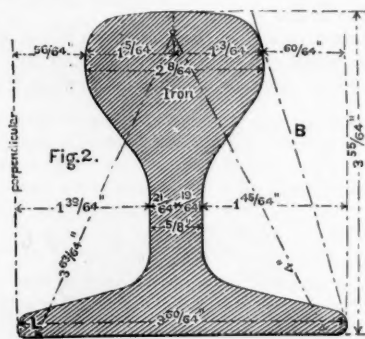
These four several sections are from the first four



rails that came at hand. No further tests were made. The inclination of stem and head that were expected appeared in each specimen. Perhaps on extended test, results would not be as uniform as those given.

If experiment establishes the fact the "leaning" is indeed caused by the handling in the mill to which we have referred it, remedy may be found in using for the finishing pass a pair of short rolls set vertically, so as to deliver the rail with its head down, upon two parallel slides arranged so as to catch the rail, one on each side, close to the base of the stem, these slides being extended so that the rail may travel on them to the cutting-off saws and undergo the operation of cutting while thoroughly supported and held perfectly level and straight. Then slip the rail along and off these slides upon supports of like kind, made to travel, like an endless chain, toward the filers and the boring machine. As one result of such treatment the rails would escape some of the "straightening" to which they have been heretofore subjected.

The inquiry which our correspondent has made obviously has relations with that recently prosecuted by Mr. M. N. Forney, the results of which were given in his very able paper, read at the annual convention of the Master Car-Builders' Association last June, entitled "The Relation of Railroad Wheels and Rails to Each Other," which we copied in our numbers of June 20 and 27.



For the facts and line of reasoning from and through which Mr. Forney arrives at the form of wheel tread and flange that he recommends, as calculated to suit existing patterns of rail better than any of those now generally used in this country, the reader is referred to the paper named, which, with thorough illustrations, has been published in pamphlet form, as well as in the *Railroad Gazette*.

In his paper, Mr. Forney clearly presents these facts: 1, that because of prevailing belief that a good chill may be more certainly got in the throat of a wheel-flange when the radius of the curve of that throat is large (or more than $\frac{1}{4}$ in. in length) than when that radius is small (or less than $\frac{1}{4}$ in. in length), wheel-makers prefer to make wheels with the more open flange-throat; 2, that because a rail in which the corners at the top of the head are made with a radius of as much as $\frac{1}{4}$ in. has considerably less tread-bearing surface, and consequently considerably less wearing capacity than it would have were these corners made with a radius of $\frac{1}{4}$ in.; engineers of way and rail makers prefer to make the radius of these corners less than $\frac{1}{4}$ in.; 3, that there is no concert of action between the wheel-makers and the designers and makers of rails; and that, as a consequence of the existence of the above conditions, there is a prevalent incongruity between rails and wheels, the results of which are seriously injurious. Illustrations show that a cast-iron wheel of

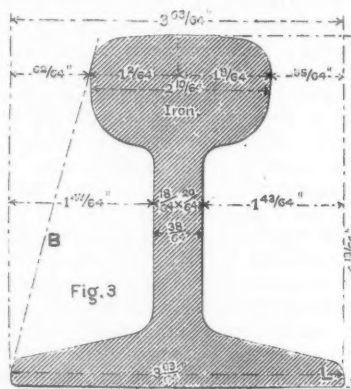
one of the patterns now largely in use, when running with its flange against the side of a certain rail largely used, has a cross-bearing on that rail of no more than $\frac{1}{8}$ in. in extent. The area of the bearing-surface under a 33-in. wheel in such case is about $\frac{1}{4}$ square inch, and cases in which the wheel bearing is of no greater area than this are not by any means rare.

With the surfaces between wheels and rails no greater than they now quite commonly are, the weight borne by the opposing surfaces is, in case of a fully loaded 8-wheel 20-ton car, about 60,000 lbs. per square inch.

Argument is hardly needed to recommend to a mechanic the proposition that an increase of the area of the opposing surfaces of the wheel and rail will reduce, or at least distribute, wear referable to friction.

To secure a bearing between wheel and rail as great in area as may practicably be had, we must make the head of the rail and the tread and flange of the wheel conform through all those parts that are in contact in service.

Mr. Forney strenuously urges such action, and advises early movement on the part of the Master Car-Builders' Association in the very important matter of the adoption of a standard form for treads and flanges of wheels; at the same time, however, asserting that "before we adopt a standard for the treads and flanges



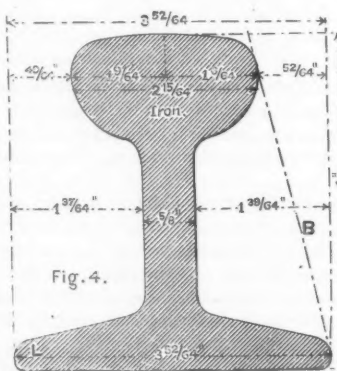
of wheels we ought to have one for rails, or at least for the parts of the rail which come in contact with the wheels."

The justice of the proposition that the wheel should be made to fit the rail, rather than that the rail should be made to fit the wheel, is, in view of the principal facts affecting the matter, quite apparent.

The form of tread and flange recommended by Mr. Forney is the entirely natural product of the elaborate and thoroughly scientific process devised by him for his examination of his subject, and consistently adhered to throughout his investigation; and we may legitimately presume that wheels embodying that form will, in service on the rails now in use, amply demonstrate the accuracy of the designer's perception and judgment.

When, however, the railroads of the country agree upon a standard form for rails, they will, it is to be hoped, make the line across the crown of the rail a straight line parallel with the line of the base of the rail; and the sides of the head of the rail convergent descending. To fit a rail made on these lines Mr. Forney's wheel-pattern need be changed only by a shaving.

In order that either side may be used as the



flange-side or gauge-side, and to simplify the form and mode of application of joint-fastenings, the two sides of the rail should be made relatively symmetrical throughout.

The progressive sentiment that, before long, will have led our railroads to agree upon and adopt in practice a standard form for the heads of rails, a standard for wheel-treads and flanges, based on the rail-form, and standard gauges for setting wheels and

rails respectively, will also, in due time, have brought about those improvements of practice in rail-making that are necessary to the production of symmetrical rails.

Usually there has been an advance of east-bound rates about the end of November. Last year an increase of from 25 to 30 cents was made Nov. 26; in 1882 a similar advance was made Dec. 1; in 1881 there were no rates; in 1880 the advance was from 30 to 35, Nov. 22; in 1879 from 35 to 40, Nov. 10. We doubt whether it will be politic to make any advance, other than the actual restoration and maintenance of the 25 cent rate, this winter. Such a restoration will be a substantial advance over what the railroads have been getting during the fall. Moreover, it is probable that shipments will be less than usual if a 30-cent rate is collected. Not that there is any dearth of freight to come forward; the quantity is exceptionally large; but that there is less than the usual immediate demand for it. The world is well supplied with wheat, and is not likely to require absolutely any supply from our Atlantic coast until after navigation opens, and the exports of corn will also largely depend on the price at which it can be sold, though, as there is no considerable supply elsewhere, the corn exports may be considerable in spite of higher rail rates. But the movement in any event is likely to be restricted to what is required for consumption before navigation opens, unless the winter rail rate is low, and it is well for the railroads to carry all they can before the canal opens.

On the other hand, it may be argued that the export movement is not likely to be very great in any event, and that as there is a very large home demand that will be supplied at a 30-cent rate as well as at a lower one, the gains on this by an advance will be greater than any possible losses by a decrease in the export movement. It is not possible to say that this is not true, though the movement for home supply will be reduced somewhat if the rate is very much higher than the lake and canal rate anticipated next season. A 30-cent rate with a rebate of 5 cents on exports might be the most rational solution, but the railroad companies seem afraid to make such a "discrimination," and a time when business is generally bad is not the best time to introduce it, though the very low price of grain favors it, as any rate the railroads could charge would still leave the cost of bread and grain extremely small.

The Northwestern wheat receipts continue to be very large—very much larger than in 1882, when the crop was equally large. Since July the receipts of the Northwestern markets, including flour, have been 69,655,000 bushels, against 56,389,000 in 1882—an increase of nearly 25 per cent. Since last year the increase is no less than 16,676,000 bushels, or 31½ per cent. Duluth, in the week ending Nov. 15, had its largest receipts—1,000,601 bushels—which is just about as much as its receipts during the first six months of the year, and more than the wheat receipts of any other place except Chicago, and nearly as much as Chicago's (1,041,465 bushels). The receipts of the leading markets for the ten weeks ending Nov. 15 (Duluth received from this year's crop only within that ten weeks) have been:

Chicago	Duluth	Toledo	St. Louis	Detroit	Milwaukee
9,527,170	7,848,721	6,606,988	4,098,096	3,577,928	2,804,681

The total wheat receipts of the eight Northwestern markets (Peoria and Cleveland, besides the above) were 36,327,330 bushels, of which 29.4 per cent. came to the two exclusively spring wheat markets, Duluth and Milwaukee, 26.5 per cent. to Chicago, which receives largely both spring and winter wheat, and the 44.1 per cent. to markets which receive winter wheat almost exclusively.

It is an important fact that Duluth thus early in the history of the country from which it receives grain should become second among the Western wheat markets, receiving more than St. Louis and Milwaukee together. But it must be remembered that the season at Duluth is a short one. When navigation closes it is likely to cease to receive, because it is not on the direct rail route from the wheat country to the East; and heretofore it has received very little old wheat after navigation has opened in the spring. Thus there are but three months in the year when it is an important wheat market. The country which sends grain there appears to carry little grain through the winter, and what it markets aside from the Duluth receipts goes to the Minneapolis or other mills.

The corn movement continues extremely light, as it has been ever since September. It is less even than in 1882, when the slight remains of the wretched crops of 1881 were all there was to market. But the smaller it is now the larger we may expect it to be when the

the new corn will pass inspection, and there will be some of that in December, doubtless, and an abundant supply in January and afterward.

Three of the Chicago railroads—the Chicago, Milwaukee & St. Paul, the Chicago & Northwestern and the Chicago, Burlington & Quincy—have adopted a new method of ticketing those passengers—such as commercial travelers and business men who travel much—to whom heretofore 1,000-mile tickets have been sold at less than the regular rates—lately \$20 per ticket instead of the \$25 charged to other purchasers. It has been found that such tickets are sometimes used so as to affect the ordinary local travel of the roads using them. It is sought to avoid this by a method which will, virtually, give the buyer the reduced rate only after he has travelled the entire 1,000 miles or more and presents the vouchers for it. This is to be done by giving to each of the traveling men, at the request of the firms to which they belong or by which they are employed, a permit which will enable the holder to buy what will be known as "commercial trip tickets," from station to station. Regular tariff rates will be paid for these tickets, but they bear coupons, or stubs, which will be preserved by the purchasers as evidence of the fare paid and distance traveled by him, and when he has stubs covering a thousand miles or more, on presenting them and his permit to the company he will be paid a rebate amounting to the difference between the sum of the fares actually paid and the commercial rate of 2 cents per mile for the whole distance traveled.

This, it is thought, will prevent the ills arising from the illegitimate sale of mileage tickets, of which there has been much complaint of late.

The Memphis & Charleston Railroad, during its fiscal year ending with June last, made larger gross and net earnings than in any previous year, though it had then for the first time to meet the competition of the Chesapeake, Ohio & Southwestern for Memphis through business. These earnings can hardly be called large, it is true, but they are about up to the average of Southern railroads (being \$4,234 gross and \$1,321 net per mile of road).

This is the only road at all direct from Memphis to the South Atlantic ports of Savannah and Charleston, and from its position it might be counted a great trunk line. It is a trunk line, certainly, but hardly a great one. Its train service, for instance, last year was equivalent to but 2.21 passenger trains and 2.19 freight trains over the 330 miles worked (all but 20 miles main line); its passenger traffic to 72 passengers and its freight traffic to 215½ tons of freight carried each way daily over the whole road.

The importance of Memphis as a traffic centre is much less than was expected when the Memphis & Charleston was first built, in 1858, when that city grew faster than any other in the South, and is doubtless much less than it would be if there were an independent system of railroads west and southwest of the city having termini there. As it is, the new Kansas City road is the only road west of the Mississippi interested in carrying to Memphis, for the Memphis & Little Rock is part of the Iron Mountain system, which is interested in carrying cotton, etc., to St. Louis rather than Memphis.

We print on another page some particulars of the trial of a continuous freight-train brake of the class known as a "buffer brake." The disadvantages and advantages of this class of brake are well known, and we do not propose to discuss them here. Many railroad men, however, desire to know in what distance an ordinary heavy freight train can be stopped when, say, half the cars are equipped with a buffer brake. We regret that the recent trials really afford no valuable information, as unfortunately those in charge of the experiments appear to have neglected the three most important points in a brake trial. To test the real merits of any continuous brake the train must be long; any brake will act on a short train, but it requires a good brake to hold a long train. Secondly, the speed and the distance in which the stops are made must be accurately ascertained, and not guessed at. The report confesses that the speeds given are the mean of the estimates of railroad men present at the test, while only the two first distances were measured, the remainder being guessed at so many "telegraph poles." The table shows the relative results of these different methods. At similar speeds and on similar grades with similar trains, the distances in which the train was stopped vary 400 per cent. Either the brake is very uncertain in its action or the estimates as to speed and distance are very erroneous,

We would suggest that in any future brake trial a train of 25 to 35 loaded box cars be used instead of a few empty flat cars; secondly, that the speed be accurately ascertained by noting with a stop watch the time occupied by the train in traversing a known and carefully measured distance; thirdly, that the brake be applied at the very instant the engine cab is abreast a definite mark or post alongside the track, and finally that the distance from that mark to the cab be accurately measured when the train has come to a stand. If a brake trial is worth doing at all, it is worth doing well, and unless these points are attended to the results obtained will be misleading and worse than useless.

There is some curiosity in this country as to the position, duties, and especially as to the "independence" of English railroad auditors. The English law (Companies' Clauses Consolidation Act, 1845), provides that railroad companies shall elect auditors at the same time and in the same manner as directors, the number, when not specified in the act forming the company, to be two, one retiring each year, but eligible for re-election. The original law (8) Vict.) required that the auditor should hold at least one share in the company, but that provision has been repealed. He may not hold any other office in the company.

The directors are required, at least 14 days before the shareholders' meeting at which the company's report is submitted, to deliver the half-yearly and other periodical accounts and balance sheet to the auditors. The latter are to examine them, employing such accountants as they think proper, at the expense of the company, and either make a report on them, or simply confirm them, and the auditors' report on confirmation must be read, together with the directors' report, at the shareholders' meetings.

The Regulation of Railways Act, 1868, provided that the Board of Trade, if asked by a resolution of the board of directors or a meeting of shareholders of the company, may appoint an auditor in addition to the company's auditors, with the same duties. When this makes three auditors the company may declare a dividend if a majority of them certify, in accordance with the provisions of an act passed in 1867, "that the half-yearly accounts proposed to be issued contain a full and true statement of the financial condition of the company, and that the dividend proposed to be declared on any shares is bona fide due thereon after charging the revenue of the half-year with all expenses that ought to be paid thereout in the judgment of the auditors."

If the auditors differ from the directors with respect to the payment of any such expenses out of the revenues of the half-year, the directors may state the difference in their report to the shareholders, and the company may decide.

This act of 1867 also provides that the auditors may examine the company's books at all reasonable times, and may call for further accounts, vouchers and information at their discretion, and may issue to the shareholders independently any statement respecting the financial condition of the company they may think fit.

It will be evident from this that the auditor in England is independent not only of the general manager, or other head of the staff operating the railroad, but also of the president (there called chairman) and the board of directors themselves, for he is chosen by their common masters, the stockholders. And, moreover, he is chosen largely for the purpose of checking the board of directors—to prevent any such manipulation of the accounts as may give an erroneous view of the results of the operation under the directors' management. The auditors are always professional accountants and usually members of London firms of professional "accountants and auditors," whose capital is supposed to be their reputation. They are elected at the same time as the directors, but by a separate vote.

The Car Coupler Question.

The subject of automatic or safety freight-car couplers was brought before the New York Master Car-Builders' Club a few evenings ago. There was virtually no discussion, and the meeting really did very little to ventilate, much less settle, the question. A number of car-coupler inventors from different parts of the country brought forward models of various degrees and styles of workmanship, and each announced his firm belief in the perfection of his own coupler. Only a small portion of the audience could even hear the inventors' statements, and very few could see or understand the peculiarities of the working of the couplers as shown by the models manipulated at the President's table by an inventor with his back to the audience.

Some of the couplers shown seemed to be practical devices and merit careful investigation and trial in actual working. Others were obviously absurd and impracticable, the schemes

of men who had no conception of the main elements of the problem before them. It is a pity that the time of any meeting should be wasted in considering these useless rattle-traps. It would be a mercy to many a poor invention to put it out of its misery at once.

To effect this, the car-builders should, as urged by Mr. E. B. Wall, at Saratoga, agree on some definite principles which all car couplers proposed for general adoption must possess. Mr. Wall moved that the couplers of the future must couple in a vertical plane, so that no part of the weight of one car can be thrown on the draw-bar of its neighbor. The meeting voted to adopt this resolution, but the car-builders generally do not appear to have adhered to it, and many show a disposition to consider, if not adopt, couplers which lack altogether the principle of coupling on a vertical plane. It was objected at Saratoga, that very few couplers of that class existed, and it was urged in reply that the demand for such couplers would create a supply. This seems to be the case. At least two couplers of this class were exhibited at the Master Car-Builders' Club meeting in New York which were practically unknown at the date of the Saratoga meeting.

The enormous number and variety of car-couplers tends greatly to confuse the issue. The number must be reduced by a process of elimination before a choice can be made. If the proposal to consider only those that couple in a vertical plane be too radical in its nature, why not exclude from further competition first, all those which are liable to injury when propelled with moderate force against a solid obstacle? This would exclude all those in which the link on striking a stop-block cannot be driven back, but must be bent. Some of the weaker brethren being thus got rid of the next step might be to exclude all those that are manifestly complicated, or expensive to make or repair. The question should then be discussed and settled, as to whether all couplers with a loose link should be admitted to further competition or not. If the question were settled in the latter sense, the issue would really lie between a comparatively small number of couplers, and attain more manageable dimensions. Probably extended practical trials would then be necessary to ascertain whether, taking one consideration with another, the principle of coupling in a vertical plane was or was not practically superior to the couplers having a fixed link and fixed pin.

The French have a proverb to the effect that the first step taken, all the rest is easy, and it would certainly appear to hold good in the car-coupler question. It has been agitated and discussed for years, and yet those who at present have the power to settle it have not yet taken the necessary first step, and are apparently as far as ever from agreeing on the essential principles which the car couplers of the future must possess. If the car-builders are waiting for what the stream of invention may bring forth, they will not injure, but rather improve, the prospect by definitely telling inventors that the possession of certain qualities will definitely exclude any coupler from competition, and that the possession of certain other qualities is essential to success. Something will then have been done at any rate to turn the current of invention in the right direction. On the other hand, many think that the youth who waited on the bank for the stream to roll by was actuated by mistaken motives. Some decisive action on the part of the master car-builders throughout the country defining the defects from which a car coupler should be free, and laying down the qualities it should possess, would be welcomed both by those who wait for the coming inventor and by those who wish to speedily arrest the loss of life, time and property occasioned by the present barbarous appliances for coupling cars.

In a notice of Mr. Isaac H. McEwen's "Train Orders, Rules and Signals" last week, an error in printing made one criticism altogether too sweeping. Having copied and condemned one extraordinarily complicated and obscurely expressed rule, the types make us say that "The same may be said of the other rules." The manuscript read, "The same may be said of some of the other rules." We would not do the author the injustice of intimating that all his rules are like the No. 37 there quoted.

Chicago through and local shipments eastward of flour, grain and provisions, for the week ending Nov. 22 last, and for corresponding weeks of three previous years, have been as follows, by the incomplete report to the Board of Trade, in tons:

	1881.	1882.	1883.	1884.
Flour.....	25,624	41,027	55,074	57,080
Grain.....				
Provisions.....				
Total.....	33,777	39,068	47,137	47,580
Per cent.:				
C. & Grand T.....	5.8	7.6	6.9	8.7
Mich. Cen.....	17.9	20.7	23.1	22.6
Lake Shore.....	24.2	17.1	14.3	20.2
Nickel Plate.....	9.6	9.0	7.7	8.5
Ft. Wayne.....	18.6	14.0	13.4	9.1
C., St. L. & P.....	11.0	14.0	13.4	8.4
Balt. & Ohio.....	5.8	6.9	8.5	4.4
Ch. & Atlantic.....	7.2	10.7	12.7	18.1
Total.....	100.0	100.0	100.0	100.0

Thus the shipments were a little greater than last year and much greater than in the other years. Compared with last year there was an increase of 48 per cent. in flour and 3 per cent. in grain, but a decrease of 19 per cent. in provisions.

For six successive weeks the tons shipped and the percentage going by each railroad have been:

the week before. Rates were to be restored at the beginning of last week, but usually most of the business for a week is engaged at old rates whenever there is an advance, and besides the reports to the Chicago Board of Trade usually include the shipments of the Saturday previous to the week reported. In this case the announcement of the advance was made Friday, and the natural consequence was that shippers at Chicago and points further west made all the engagements possible before the advanced rate went into force. The grain shipments were little more than in the last week of October and the first week of November, but the flour shipments have increased rapidly for three weeks, and the provision shipments for a longer time. This latter is natural, as the winter packing season began Nov. 1, and much greater quantities are packed than in earlier months, though so far not half as much as last year.

The percentages going by the different roads show the irregularities very similar to those of previous weeks, especially an extraordinary share of the business going by the Vanderbilt roads. In the aggregate the percentages of these three roads in the successive weeks have been:

51.7	46.8	45.1	51.3	67.2	64.0
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while those of the two Pennsylvania roads have been:

29.6	28.0	26.8	17.5	19.1	18.5
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The excessive proportion going by the Vanderbilt roads is noticeable especially in the provision shipments, which usually go chiefly by the Pennsylvania roads and the Chicago & Grand Trunk. But last week the Lake Shore led in provision shipments, taking 22.1 per cent. of the whole, while the Michigan Central had 20.6 and the three Vanderbilt roads 47 per cent. Meanwhile the Chicago & Grand Trunk took but 6.7 per cent. and the two Pennsylvania roads 38.7 per cent. The Vanderbilt roads carried 60.8 per cent. of the flour also, and the Chicago & Atlantic 26.0 per cent., leaving but 13.2 per cent. for the three other roads.

The evidences of cutting rates, and of more cutting by some lines than by others, were greater last week than in any other, but this does not prove that the cutting was done last week. It is the common experience that where some road has been making special and secret contracts and rebates, a restoration of rates apparently forces over it within a few days business which otherwise would have gone forward more slowly. The close approach of the close of navigation tends to increase rail shipments. Last year in the last week of November the shipments were a third more than in the first week, though very large in the first week; in 1882 they were 40 per cent. more, and even in 1881 17 per cent. more in the fourth week. This year the low rates made the shipments so large early in the month that a large increase may hardly be expected if rates are actually restored and maintained.

The cattle shipments from the ranges on the Northern Pacific have closed for the season. A rough estimate of the number shipped to market this season is 80,000, against about 37,000 last year. Last year was substantially the beginning of this traffic, and the progress so far made is chiefly in stocking the ranches rather than in turning out fat cattle. That this is so is indicated by the fact that the westward shipments this year have been 92,899 (against about 20,000 last year), and the stockmen in Montana and Western Dakota recruit their ranges not only from the East, but from the ranges further south and even from Oregon and Washington, where the milder climate is more favorable for breeding cattle.

The winter packing season opens very weakly. For the first 12 days of November the number of hogs packed in the Northwest was 279,688, against 507,079 last year. But for this several causes exist. The election came during this period, and though probably the excitement and activities attending election did not hurt the appetite of any of the hogs and keep them from getting fat, they probably did somewhat lessen the buying, shipping and packing. Further, the month was, and has remained, very mild, and freezing weather is most favorable for packing. But more than all, probably, is the effect of the dearth of stock hogs and the cheapness of new corn. The farmer who has hogs can get perhaps 50 per cent. more for his corn when transformed into pork than in any other way, and the result naturally is that he desires to put on every pound of fat that the animals are capable of. Though fattening on new corn might begin by the first of October this year, the time was not sufficient to make the hogs thoroughly fat, especially as old corn was so dear that fattening was unlikely to begin until the new corn could be fed. Very likely by the time there is solid freezing weather in the Northwest, the packing will be heavy; but it will not be surprising if there should be more packing after New Year's and less before it than there usually is. If the estimates of the Department of Agriculture are correct, the number of hogs that can be fattened is much less than last year.

Kansas City has taken the second place among hog-packing places, and apparently has taken it to keep, as it has gained throughout recent years when most other places were losing. This is natural, because Kansas, from which chiefly it obtains hogs to pack, has been having good and increasing crops of corn during the two years when most Western states had much less than average crops. The number packed at Kansas City for six successive years, ending with Oct. 31, have been:

1878-79	1879-80	1880-81	1881-82	1882-83	1883-84
261,808	435,319	796,120	714,612	1,033,672	1,046,387

What is especially notable about the Kansas City packing is that there is now more of it in the "summer" (March 1 to Oct. 31) than in the winter season, though the latter un-

til recently was called simply "the packing season," it being assumed that in the other eight months of the year there would not be packing enough to affect the supply materially. But the Kansas City summer packing has been:

1879	1880	1881	1882	1883	1884
145,630	239,719	456,442	368,795	588,298	619,225

Thus more than half the hogs have been packed in the summer season in all these years, and last year 59 per cent. of them, this being a year when the supply of corn was abundant (in Kansas) both seasons.

This and Nebraska are the only Western corn states that show any increase in the number of hogs for fattening since last year, whence we may conclude that during the current year Kansas City will do even more than its recent large proportion of the year's packing.

An example of a great deal of work done for a very little pay is shown by a way-bill recently issued at the local station of a railroad for the shipment of 50 different packages of freight, weighing in the aggregate less than 5,000 lbs., to 31 different consignees in several different states on connecting roads. The 50 packages were received, receipted for, handled, way-billed, loaded, carried, and transferred to a connecting road, and for these services the company receiving the freight from the shipper received the sum of \$1.70—3.4 per cent. per package handled. This was not a cut rate, but properly a local rate. The custom of making a terminal charge or a charge for way-billing, common in Europe, would prevent any such absurd disproportion of charges to services. The way-bill itself is a formidable document, with the names of the 31 consignees and the destinations, and the description and weights of freight. The only thing insignificant about it is the aggregate of the charge. These shipments were going for the most part 800 miles or so, and the aggregate freight charge collected of the consignee may have been a fair one, while the lack of recompense to the initial road was due to its getting no pay for shipping and forwarding, but only for carrying.

The Philadelphia & Reading Railroad, as many readers may remember, began experimenting something over a year ago with 60-ft. rails, in order to reduce the number of joints. Mr. H. K. Nichols, Chief Road-Master of that line, informs us that "a number of both iron and steel are now in use which have been in our tracks about one year at a point where they are receiving a thorough test, and the results so far are exceedingly satisfactory." If it should finally prove that the vexed question of joints could have even one half of it eliminated in this manner, without corresponding disadvantages, it would be an end greatly to be desired, especially as it would probably aid much toward a satisfactory solution of the other half of the problem, by making the cost of a jointly on half as important.

At the last regular meeting of the New England Railway Club, Nov. 19, Mr. F. D. Adams, of the Boston & Albany Railroad, President of the Club, made the following statement as to the present status of the car-coupler investigation. After calling the attention of the members to the fact that quite a number of the New England railroads had appointed a representation to meet in convention at such time and place as the Executive Committee of the Club may select, to promote the object of the master car-builders in the adoption of a uniform standard automatic freight car coupler, and stating that it seemed desirable that some action should now be taken upon the subject, Mr. Adams then said: "The Commissioners, up to the present moment, have not intimated what their action will be, neither have they given any date on which the expected report will appear so far as I know. The Commissioners are entering into a thorough investigation of the subject in all directions. The master car-builders and master mechanics throughout the country have been interviewed quite generally, and a comprehensive report may be expected; and if it is made to the Legislature by Jan. 1, 1885, it will give us two months for consultation and consideration before the law takes effect. We can then confine our attention to those couplers which the Commissioners will approve."

Several members then expressed their interest in the subject and their desire to see some definite action taken, by the appointment of delegates and otherwise toward reaching a final decision. The matter was finally referred back to the Executive Committee.

A letter was read at the recent meeting of the New York Car-Builders' Club which asserted that several of what are commonly regarded as the most improved forms of couplers are, when coupling with an ordinary draw-head, dangerous to the life and limbs of the man performing the coupling, and that it is safer to couple two ordinary draw-heads together, than to couple a Janney, Miller, Cowell or Ames to an ordinary draw-head. This statement passed without discussion or denial, but certainly calls for some explanation. What is the experience of Master Car-Builders on this point?

Mr. Arthur T. Hadley's course of instruction on railroad subjects to be given at Yale, seems to have met with approval in other colleges.

The Tech advocates the formation of a similar course at the Massachusetts Institute of Technology, so that the young men who graduate there, intending to go into the railroad business, may receive a thoroughly distinctive training, embracing more than that contained in a course for civil or mechanical engineers.

Since publication in the *Railroad Gazette* of Nov. 7 of a note with reference to the publication of condensed profiles

on the time-tables on the Atlantic & Pacific Railroad we have received a set of time-tables on the Cleveland, Columbus, Cincinnati & Indianapolis Railway which carry out the same idea even more fully, the profile of each division being printed to a large scale (4 miles per inch horizontal and 50 ft. per inch vertical) on the back of each division time-table. The vertical scale of these profiles is so large as to produce an unduly bad impression on the character of the grades on actual inspection; a grade of 15 ft. per mile, for example, being almost straight up in the air, so that the profile has a decidedly saw-like appearance, although the grades are in reality not severe. The advantage, however, of having all the train-men and employees generally well informed as to where and what the bad grades of the lines really are is obvious, and the expense must be very slight. The printing of the profiles on the time-tables would, therefore, seem to be a practice deserving of more general observance.

The most important step yet in reference to the introduction of electric motive power is reported this week to have been taken by the Manhattan (elevated) Railway Company, which will permit the laying of a central conductor for the entire length of its Second Avenue line at the joint expense of five different companies controlling as many systems of electric propulsion, each of which is then to have opportunity to show practically the merits of its system. The Second Avenue line was selected, doubtless, as having by far the lighter traffic. The mere consent to have tests made at the expense of the competitors does not of course commit the company to anything nor even necessarily indicate much hopeful ness. So serious an inconvenience as an interference with the traffic of even the Second Avenue line would hardly have been permitted, however, unless more than a possibility of success was supposed to exist. The President of the company, Mr. Cyrus W. Field, said in a recent official address, that a practicable, and economical application of electricity as the motive power of the elevated railroads might be hoped for "perhaps within the present year"—a degree of hopefulness which probably took by surprise every one who regarded it as carefully weighed.

Doubtless the mechanical conditions are exceptionally favorable on the elevated railroads, and the question of cost less important than most other railroads. No crossings and few turnouts have to be provided for, the saving of noise and dirt would be great, and the saving of delay for coal and water appreciable. Any new motive power which will make it possible to run longer trains may be of great value to the company and the public, even though the cost per horse-power be increased. The trains are now limited by the weight of the locomotive, which is limited by the strength of the structure carrying it to about that of the engine now used.

We are informed of the death, at Rouen, of Edward Lavoigne, a Chief Engineer of the Corps of Ponts et Chaussées, and Chevalier of the Legion of Honor, a French engineer who should have been much better known in this country than he was. That he was not better known here was largely the fault of the *Railroad Gazette*. For Mr. Lavoigne was one of the authors of Lavoigne and Pontzen's great work on "American Railroads," by far the most complete treatise on the subject in any language, which should have been reviewed at length in these columns long ago.

Its great merits would certainly have gained for Mr. Lavoigne and its surviving author a reputation in this country which they richly deserved. Mr. Lavoigne, we believe, had charge of the portions respecting traffic, rates, etc., and we know, by his numerous applications to us for information, that he took very great pains to be accurate and as complete as the nature of the subject permitted.

Mr. Lavoigne died Oct. 24, in his fifty-first year.

Record of New Railroad Construction.

Information of the laying of track on new railroads is given in the present number of the *Railroad Gazette* as follows:

Burlington, Cedar Rapids & Northern.—The track of the Clinton Division is extended from Tipton, Ia., east to Noel, 31 miles, completing the line.

Delaware & Bound Brook.—The East Trenton Branch is completed around the city of Trenton, N. J., 3 miles.

Kansas City & Southern.—Extended from Brownington, Mo., south to Osceola, 16 miles.

Norfolk & Western.—A freight branch is completed from Norfolk, Va., to Lambert's Point, 3 miles.

Raleigh & Gaston.—A branch is completed from Warren station south to the town of Warrenton, N. C., 3 miles.

Wheeling & Lake Erie.—Extended from Valley Junction, O., southeast to Sherrodsburg, 10 miles.

This is a total of 66 miles of new railroad, making 3,425 miles reported to date for the current year. The total track reported laid to the corresponding date for 13 years past is as follows:

	Miles.		Miles.
1884.....	3,425	1877.....	1,964
1883.....	5,717	1876.....	2,153
1882.....	9,255	1875.....	1,176
1881.....	6,983	1874.....	1,731
1880.....	5,443	1873.....	3,456
1879.....	3,463	1872.....	6,559
1878.....	2,126		

These statements include main track only, no account being taken of second tracks or other additional tracks or sidings.

The Elements of Railroad Engineering.

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IV.—MAIN TRACK AND SIDINGS.

1. The Ideal Track—Ballast—Ties or Sleepers—Joints.

The foundation of all good railroading is a good track, without which, no matter how superior all other appliances and equipments may be, there can be no success. Speed, safety and economy in operating expenses, all depend upon the character of the track. Every other department of the administration may be pinched or slighted with less evil results than that of the maintenance of way. Doubtless the absolute minimum of expenses would exist upon a road where the condition of the track should be perfect, with nothing to be desired in the way of betterment. It might, indeed, cost too much, rendering the interest account too large in comparison with the traffic carried over it; but the expenses of operating, as repairs of roadway, of engines, of cars, would be less than have ever been realized.

An ideal track, such as this, may not be altogether attainable, yet it should be continually approached, with the knowledge that every departure from the ideal condition is a certain cause of expense. This perfect condition demands, first, that the surfaces of the rails shall be exactly true to the plane of the grade, so that no vertical shock shall be given to the wheels as they roll over the track; and second, that the line of the rails shall be so true that the flanges of the wheels will seldom touch them, and then without a jar. If the speed of all trains were uniform, the elevation of the outer rails could be so exactly adjusted as to fulfill this second demand upon curves, as well as upon straight lines; since, however, the speed of trains varies widely, it is necessary to "split the difference," and to accept an elevation too great for low speeds and really less than is desirable for high speeds. It is safer, with our tendency to higher speeds, to adopt a higher elevation than the average rate would require. This second demand will also compel an addition of width to the gauge, in proportion to the rate of curvature. A neglect to "spread the gauge" in this way, in the turn-outs for sidings, is a frequent cause of derailment in switching. This widening of the gauge may be larger in amount than is necessary to conform to the rule, rather than too little. Every one should know where to find the rules or tables for the super elevation of rails and for the widening of gauge, for they are advertised in the *Railroad Gazette*.

Too little care is taken, in general, to secure perfection of line. After curves have once been laid according to centres from the engineers, they are left for years, perhaps forever, subject to the eccentricities of vision of each succeeding section foreman. No human eye can be relied upon to run a true curve unaided. So, after track has been raised to final grade, each curve should be carefully run with a transit, and centres, not more than 50 ft. apart, should be permanently fixed as a constant guide for the trackmen. Perfection cannot be arrived at upon straight lines without the use of the transit, and it would be profitable upon the larger roads to furnish for each section a cheap, plain transit, without graduated circle or compass, to secure better alignment and to save the time of men when lining track. Upon small roads, where there is no permanent corps of engineers, it would pay well to employ a force temporarily, to fix the lines by permanent stakes.

It is not very difficult to put a piece of road into a condition nearly approaching the ideal perfect state just described; the important problem for practical men is, how to keep it so. In a perfectly dry climate this problem would resolve itself into a question of the proper number of suitable sleepers, and of any material under them, which should have sufficient stability to prevent their being pressed into it by the passing loads; but in our climate, the rain or snow will saturate and render semi-fluid all materials which will absorb much moisture; as soon as wet, these materials, such as loam or clay, yield to the pressure, and the labor which may have been expended in adjusting the track is lost. Following this comes the frost, which heaves the wet soil up, carrying the track along with it, until the spring, when the particles of ice which have distended the earth are melted, and it slumps down, affording no support whatever to the track. Evidently those materials which will hold the least moisture are the best to use for maintaining a track, and the best among such is broken stone, whether in the form of gravel or broken artificially; of which, it has been found by experience, that about two feet in depth, upon well settled embankments or in thoroughly drained cuttings, will maintain a severely worked track in fair condition throughout the year. By so much as this thickness of ballast is reduced, by so much will the labor be increased which will be necessary to keep the track in an equally good state; yet even six inches in depth under the sleepers will be of great value. Broken stone is superior to gravel in general for ballast, because there is usually some admixture of loam or clay, or of too fine sand, in gravel in its natural state. If these objectionable materials were to be screened out, or, still better, washed out, a very excellent ballast might be in many places procured, at a less cost than by breaking up stone. Where a good supply of water can be had the cost of washing gravel need not be excessive. In hydraulic mining the ordinary cost of washing gravel for gold is stated at from two to four cents per cubic yard; for the hardest material, cemented gravel, it sometimes amounts to 12 cents.

Of natural materials the next in value for ballast is very coarse sand, because it will retain less moisture than any other except stone in a coarse form; yet it has not stability enough to support a track permanently, which, when ballasted with sand, requires a constant and large expenditure of labor in raising and retamping it. Sand is objectionable also as always more or less dusty. Furnace

slags, and even hard-burned brickbats, have been used with much advantage where stone and gravel could not be got. They are friable, and, like soft stones, do not endure well the tamping necessary to consolidate the ballast under the sleepers. The harder the stone the better, if it can be broken into cubes of from one to two inches on the side, by hammers or in the crusher. It is not worth while to put expensive ballast upon new, unsettled embankments, for it will be lost; where track must be laid upon them before they have become consolidated, it should be surfaced with the best cheap material at hand.

A track laid upon good ballast of sufficient thickness, if once well surfaced and tamped, should require very little labor upon it afterwards, except as renewals are needed; but when laid upon a material containing loam or clay, it will need to be constantly readjusted; yet it may be raised and tamped too often. The only hope with bad materials is that they may become consolidated, and shed the rain instead of absorbing it. This can be promoted by giving the surface as steep a slope from the centre of the track each way, to the edge of the embankment or ditch, as the proper bedding of the sleepers will allow. If the earth has been freshly stirred, it will soak in all the water that falls upon it and becomes mud; of course, all the labor which has been expended in raising such a track is lost during the first heavy storm. Bad materials should never be tamped after the approach of the rainy season; the only way then to raise the low places is by wooden shims between the sleepers and the rails until the dry season comes round again. The poorer the ballast the more grass will grow in it; when allowed to vegetate undisturbed it will soon work much harm to the ballast, and ought therefore to be promptly removed. Special tools are made for cutting up the grass in gravelly road-beds, without disturbing the surface too deeply, and more rapidly than it can be done with a shovel.

Next in importance to good drainage and good ballast, in the maintenance of a railroad, is a first-rate joint for the rails. For a very long time, in this country, experiments were confined to seeking the cheapest device which would carry a train safely; it did not enter the minds of men to invent the best possible joint regardless of cost, as they ought to have done first; when, having found a perfect standard, they might have calculated how far they could afford to depart from it. It is likely that they would have become satisfied, very soon, that the best joint is the cheapest in the long run; for it is a difficult thing to hold together stiffly the adjacent ends of two shallow bars, such as our rails, under the impact of the heavily loaded wheels of a railroad train. The first fish-plates used were little more than a hinge; the short angle plates leave something to be desired; laid between the sleepers, they certainly have not fulfilled the expectations of their advocates; lengthened to extend over three sleepers, one of which is under the joint, they make a splice which carries the wheels better than anything yet tried.

For a long time, it has been an unsettled question whether to lay the joints, in the two lines of rails which constitute a track, opposite or alternating; theory, of course, would counsel that they should alternate, yet the weak joints used at first caused a track so laid to impart a rolling motion to the train, which was more disagreeable than the square jump made when the joints were opposite; a remembrance of this still survives among old track-masters, who are reluctant to believe that this objection has been overcome by strengthening the joint; nevertheless, they may convince themselves of the truth by riding over a good track so laid, or by inspecting the diagrams taken by Mr. P. H. Dudley's admirable testing car, which prove it conclusively.

The best sleepers (the name cross-tie is a mistaken use of a word which belongs to the bridge builders) are of white oak; they should be peeled, with ends squared exactly to length. As they cost less here than steel rails, we can afford to use more of them under the rails, rather than to increase the height or weight of the rails, one or the other of which things ought to be done, on many of our railroads; for the sleepers should be so near together that there will be no sensible deflection of the rails between them, under the heaviest loads, which is not the condition now generally existing. An extensive use of iron or steel for sleepers will not probably prevail in this country, for many years yet. The impossibility of getting strong, durable timber sleepers at reasonable cost, has led to the use of metal ones in countries where there is very little or no frost; in this land, where everything is more or less rigid in winter from freezing, the superior elasticity of wood under the rails will continue to make wooden sleepers preferred; and if they were to be creosoted, they might prove not only better on this account, and cheaper, but even as durable as the iron ones. It is a question at this time, worth the attention of managers, whether or not it would be profitable to creosote them; probably the slightly increased cost of handling would be more than repaid by the increased durability of the sleepers, to those roads which import their supplies of them through one or two depots.

Chestnut and the best Southern yellow pine rank next after white oak in value for sleepers; other woods are either very much inferior to these in durability in their natural state, or are to be had in too small quantities to make it worth while to classify them. There are many kinds which would be very valuable if creosoted; the requisites then would be that they should possess a firmness of fibre sufficient to stand up under the load of trains, and to hold a spike. There are several other processes for preserving timber which would be of value, yet creosoting has established itself as the most satisfactory one for sleepers.

CHARLES PAINE.

New Trade Publications.

Illustrated Catalogue of Railway and Machinists' Tools and Supplies. Manning, Maxwell & Moore, New York.

This book, which is excellently printed and well got up, contains over 2700 illustrations of nearly every possible article coming under the comprehensive title of railroad supplies. It is probably the most complete work of its kind ever published.

Catalogue of Special Tools for Railway Repair Shops. Published by the L. B. Flanders Machine Works Philadelphia, Pa.

This little volume contains illustrations and descriptions of a variety of tools which are specially designed to facilitate locomotive repairs. Messrs. Pedrick & Ayer, the proprietors of these works, have introduced several novel and ingenious machines for truing-up crank and wrist-pins, planing valve-seats, valves and links, facing cylinder-joints, cleaning flues, drilling the holes in smoke-boxes, and performing other special work more efficiently and cheaply than if done by hand or by ordinary machine tools. Some of these tools have been already illustrated in the *Railroad Gazette*. The book concludes with a large number of fac-similes of testimonials.

The Woodbury, Merrill, Patten & Woodbury High Pressure Air Engine.

This form of engine is manufactured by the Hinkley Locomotive Co., of Boston, and an attempt is made in pamphlet form to render its construction comprehensible, and its advantages apparent. These efforts cannot be said to be crowned with perfect success. The drawings practically show nothing of the construction of the engine except that the fly-wheel seems to be trying to run away from the four cylinders and the two walking beams. Possibly they may have had a quarrel. At any rate their relations seem a little strained, and none of them appear to be quite in their proper place.

The high temperature inseparable from an air engine of any pretensions to economy has always rendered the lubrication of the pistons and valves a difficult problem, and most hot air engines have failed on this very point. The pamphlet states that the lubrication difficulty is overcome by the same body of air being alternately heated and cooled and used over and over again, like the water in a pair of marine engines fitted with a surface condenser. At sea a great deal of trouble is given by the gradual accumulation of grease in the boilers caused by the continual lubrication of the steam. The same greasy particles are continually passing from the boiler to the cylinders, and through the condensers back again to the boiler. Much the same action takes place with the air engine, but the accumulation of grease is there an advantage and an economy, the rubbing surfaces in contact with the air becoming so hot that ample lubrication is essential.

The pamphlet unfortunately gives no data as to the weight, cost or size of an engine of given power, and no particulars are given as to the consumption of fuel per indicated horse-power. The author, however, remarks: "The practical results so far attained in this engine with regard to economy are only about half as great as theory would indicate and very much better results may be hoped for in the future." As there will always be a demand for an engine which can run without a boiler, we trust that the author's aspirations may be speedily gratified, and some further experience and improvement may render the Woodbury engine a practical success.

TECHNICAL.

Files.

Steel for files is made of special length in the bar so that the blanks can be cut without waste. These blanks are then forged, ground, annealed and cut. They are then hardened and tempered in molten lead and finally assembled before an inspector, who has a piece of steel, hardened to saw temper, called a prover, which he draws over every file from point to heel, judging by the "feel" of the prover whether the file is hard enough or whether there are soft spots in it. Then he rings the file, balancing it on his finger and striking it lightly with a piece of flat steel. If it gives out a clear sonorous note, is flat, without wind or crook and "proves" all right it is a good file and is put up with the firm's name on it. If it does not ring it is a "dummy," the stamp is ground off and it is sold as second quality. A file should be straight and true on the faces, that is, not twisting. It should be thick for its length, as thin files are apt to be re-cut files and are liable to be fire cracked from the second hardening. A thin file cannot be re-cut as there is not stock enough in it to re-grind. Some file-makers skin the weight of their steel as close as possible, as files are sold by the dozen and not by weight.—Exchange.

Electric Motors for Railroads.

A meeting of gentlemen interested in electric motors was held last night at the house of E. N. Dickerson, in New York, Nov. 25, with the purpose of consolidating, under one company, all the best features of the various systems, thus securing a prompt application of electricity to the railroads of the world. Among those present were Stephen D. Field, electrician; the Messrs. Hawkesworth, representing the Daft electric motor; Mr. Coster, representing Draxel, Morgan & Co. and the Edison patents; Charles Hoeltner, representing the Siemens patent; E. N. Dickerson and E. N. Dickerson, Jr.

The meeting was the culmination of a series of meetings and negotiations looking to this object. The great stumbling block hitherto has been the competitions and rivalries of the various motor companies.

The meeting resulted in the adoption of a plan which, it is believed, will secure the very best possible electric motor within a very brief period. The plan adopted is that the owners of the Edison motor, the Field motor, the Daft motor, the Siemens motor and the Brush motor, shall submit their inventions to the judgment of a practical commission consisting of Sir William Thompson, of Glasgow University; George B. Roberts, President of the Pennsylvania Railroad;

*See *Railroad Gazette*, Sept. 5, 1884, pages 647, 648.

J. H. Rutter, President of the New York Central & Hudson River Railroad; Robert Harria, President of the Northern Pacific Railroad, and Charles R. Cross, Professor of Physics in the Massachusetts Institute of Technology.

A company is to be formed with a capital stock of \$1,000,000, half to be paid in cash. The five motors are considered to be worth the other half million, and their owners will receive that amount in stock of the company in the proportion determined by the commission, which has absolute power to make a final decision. The commission may award the entire half million to one invention if it sees fit.

As the apparatus and patents of all the motors become the absolute property of the new company, the result, it is claimed, will be to make a motor combining all the advantages of all the motors now known to be of any value. The gentlemen of the commission are in a position to give all the motors a thorough test at once on all sorts of lines, with heavy grades, sharp curves, big loads, and straight level tracks. It is expected that their report will be ready within 90 days at the furthest.—*New York Sun.*

Catalpa for Ties.

The 240,000 catalpa twigs which President Mackey, of the Evansville & Terre Haute Co. set out two years ago, are now, it is said, 3 in. in diameter and growing vigorously. Five years from now they will furnish cross-ties, not only for the Evansville & Terre Haute road, but for the Chicago & Eastern Illinois as well.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Boston & Albany. annual meeting, at the Meisano in Boston, at 11 a. m., Feb. 11, 1885.

Boston & Maine. special meeting, in Lawrence, Mass., Dec. 2, to vote on an amended lease of the Eastern Railroad.

Eastern. annual meeting, in Boston, Dec. 10. The register of certificate-holders entitled to vote will be open for correction until Dec. 3. A special meeting will also be held in Boston, Dec. 2, to vote on an amended lease of the road to the Boston & Maine.

New Orleans & Northeastern. annual meeting, at the office in New Orleans, Dec. 1.

New York & New England. annual meeting, at the office in Philadelphia, Jan. 12, 1885. The registry of stock closed Oct. 12.

Richmond & Allegheny. annual meeting, at the office in Richmond, Va., Dec. 9, at noon.

Richmond & Danville. annual meeting, at the office in Richmond, Va., Dec. 10, at noon.

Richmond & West Point Terminal Co. annual meeting, at the office in Richmond, Va., Dec. 9, at noon.

Worcester, Nashua & Rochester. annual meeting, in Worcester, Mass., Dec. 2.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Albany. 2 per cent., quarterly, payable Dec. 31, to stockholders of record Nov. 29.

Chicago, Burlington & Quincy. 2 per cent., quarterly, payable Dec. 15, to stockholders of record Nov. 22.

Chicago & Northwestern. 2 per cent., quarterly, on the preferred stock, and 3½ per cent., semi-annual, on the common stock, both payable Dec. 26. Transfer books close Dec. 3.

Delaware & Hudson Coal Co. 1½ per cent., quarterly, payable Dec. 10. Transfer books close Nov. 28.

Lehigh Coal & Navigation Co. 3 per cent., semi-annual, payable Dec. 9, to stockholders of record on Nov. 28.

Northern (New Hampshire). 3 per cent., semi-annual, payable Dec. 1, to stockholders of record Nov. 18.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Master Car-Builders' Club* will hold regular meetings at its rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month. The next regular meeting will be on Thursday, Dec. 18.

The *New England Railroad Club* will hold its regular meetings at its rooms in the Boston & Albany station in Boston, on the evening of the third Wednesday in each month. The next meeting will be held Wednesday, Dec. 17.

The *Western Railway Club* will hold regular meetings at its rooms, No. 103 Adams street, Chicago, on the third Wednesday in each month. The next meeting will be held Wednesday, Dec. 17.

Foreclosure Sales.

The *Pittsburgh Southern* road was sold under foreclosure in Pittsburgh, Nov. 20, and bought for \$50,000 by Thomas M. King, for account of the Baltimore & Ohio Railroad Co. The line runs from Pittsburgh to Washington, Pa., 32 miles, and has been controlled and operated by the Baltimore & Ohio for nearly a year, that company having bought a majority of the bonds. The sale now simply confirms its title.

The sale of the *Austin & Northwestern*, which has already been adjourned several times, has been again adjourned till Jan. 7, 1885, at Austin, Texas.

Railway Freight & Passenger Conductors' Mutual Benefit Association.

The tenth annual convention of this association met in Chicago last week. Mr. Robert Laughlin, the President, occupied the chair and 92 delegates were present. The President delivered his annual address. The Secretary reported that for the year ending Sept. 30 there were eight natural deaths of members and two accidental deaths. The total receipts for the year were \$48,332 and the payments \$42,371. The whole number of members at the close of the year were 1,487. The chief business transacted was a revision of the order business and an amendment to the constitution permitting the President to call the annual meeting either in October or November. At the close of the convention members were taken on an excursion to Pullman.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—The following circular has been issued by Traffic Manager J. F. Goddard: "Mr. C. H. Wood, General Agent, is transferred from Kansas City, and will hereafter have charge of the freight and passenger business of this company in the district heretofore under the control of Mr. J. O. Philippi. His headquarters will be at No. 54 Clark street, Chicago."

Baltimore & Ohio.—The board met last week and elected Robert Garrett President, in place of John W. Garrett, deceased. He has been Acting President since some months before his father's death.

The board then elected Samuel Spencer First Vice-President, in place of Robert Garrett; Thomas M. King (General Superintendent of the Pittsburgh Division) Second Vice-President in place of Mr. Spencer; and re-elected Orland Smith Third Vice-President.

An important change in the organization was made by the appointment of Mr. Bradford Dunham to be General Manager of all the company's lines, an entirely new office on this road. Mr. W. M. Clements, late Master of Transportation, was made General Superintendent of the Main Stem and branches, and Mr. G. J. Foreacre was continued as General Superintendent of the Trans-Ohio divisions.

Mr. Dunham, the new General Manager, is a native of Georgia, and, after serving on several roads in that state in minor positions, was made Superintendent of the Montgomery & Eufaula. From that road he went to the Louisville & Nashville as Superintendent of the South & North Alabama line, and afterward of the Mobile Division also. In 1881 he was made General Manager of the Trans-Ohio division; of the B. & O. in November, 1883, he was appointed General Manager of the Louisville & Nashville, but resigned that office in July last.

Blue Line.—The General Manager announces that C. H. Adair has been appointed Agent of this line in charge of New England business outside of Boston and that Mr. S. M. Reed has been appointed Agent of the line in charge of Boston business.

Boston & Albany.—General Superintendent W. H. Barnes has been appointed General Manager, an office which has not been filled for several years. Assistant Superintendent E. Gallup succeeds Mr. Barnes as General Superintendent, with office in Springfield, Mass. Mr. Arthur Mills, late General Freight Agent, is appointed General Traffic Manager, a new office on this road. Mr. H. T. Gallup, late Assistant General Freight Agent, succeeds Mr. Mills as General Freight Agent.

Boston & Lowell.—Mr. W. R. Brackett (formerly General Ticket Agent of the Boston, Concord & Montreal road) has been appointed General Baggage Agent of this road and its branches.

Boston & Providence.—At the annual meeting in Boston Nov. 19, the old directors were re-elected as follows: Henry A. Whitney, Thomas P. I. Goddard, J. Huntington Wolcott, William R. Robeson, Francis M. Weld, Joseph W. Balch and Royal C. Taft.

Boston, Revere Beach & Lynn.—At the annual meeting in Boston last week the following directors were chosen: Edwin Walden, Edward Tyler, David H. Sweetser, Matthew Bolles, Amos F. Breed, L. S. Judd, Isaac P. T. Edmonds, Joseph W. Smith and Jesse Tirrell.

Central Branch, Union Pacific.—At the annual meeting in Atchison, Kan., recently, the following directors were chosen: Charles Francis Adams, Jr., Sidney Dillon, Ezra Baker, F. Gordon D-xter, F. L. Ames, Elisha Atkins, J. Gould, Henry McFarland, O. W. Mink, B. C. Westmore, A. L. Williams, J. P. Usber.

Chicago, Rock Island & Pacific.—Mr. Jerome McClintock is appointed General Agent at Council Bluffs in place of S. S. Stevens, resigned.

Chicago & Western Indiana.—Mr. R. W. Johnson has been appointed Master Mechanic in place of H. C. Washburn, resigned.

Cincinnati, Hamilton & Dayton.—Mr. George Hagdon has been appointed Train-master of this road, in place of Mr. J. W. Finck, resigned.

Cleveland, Columbus, Cincinnati & Indianapolis.—Mr. J. E. Reeves is appointed General Southern Agent for this company and its controlled lines, to date from Dec. 1, with headquarters at No. 108 West Fourth street, Cincinnati, Ohio.

Columbus & Cincinnati Midland.—Mr. C. S. Wight has been appointed General Freight Agent and Mr. J. W. Timmons has been appointed Road-master and Train-master.

Crawford Junction & McKean County.—The officers of this new company are: President, J. K. P. Hall, St. Marys, Elk County, Pa.; Directors, Samuel Hines, Scranton, Pa.; Lewis V. Bright, James Buckley, John J. Wilkinson, Philadelphia; C. L. Atterbury, Edmund S. Bowen, John King, New York.

Eastern & Western Air Line.—The officers of this new company are: President, Thomas W. Osborn, New York; Secretary, Clinton L. Conkling, Springfield, Ill.; Treasurer, F. L. Matthews.

Geneva, Ithaca & Sayre.—This company, which is controlled by the Lehigh Valley Co., has elected E. P. Wilbur President; Charles Hartshorne, Vice-President; John R. Fanshawe, Secretary; W. C. Alderson, Treasurer.

Houston & Texas Central.—Mr. D. Ripley has been appointed General Freight Agent of this road, in place of Mr. E. D. True, resigned. Headquarters at Houston, Texas.

Illinois Midland.—Mr. Austin L. Hartwell, late Car Accountant, having died, all communications relating to car accounts should be sent to D. H. Conklin, Receiver, at Decatur, Illinois.

Independence & Verdigris.—The directors of this new company are: J. M. Anderson, G. W. Donaldson, John Filkins, Henry Foster, F. V. Hackett, E. T. McFarland, Wm. Otis, M. H. Stahl, A. C. Stich. Office at Independence, Montgomery County, Kansas.

Kentucky Central.—Mr. J. D. Gunn has been appointed Chief Train Dispatcher, in place of L. A. Boyd, resigned.

Lackawanna & Pittsburgh.—Mr. George A. Baker has been appointed Traffic Manager, with office at Angelica, N. Y. This is a new office on this road.

Lehigh & Hudson River.—The following circular from President Grinnell Burt is dated Warwick, N. Y., Nov. 21: "Taking effect this day, Mr. Frank E. Smith, is appointed General Freight Agent of this company, with office at Warwick, N. Y., vice Mr. John Sayer, relieved by request."

Milford & Woonsocket.—Mr. W. W. Jenckes is appointed Superintendent, with office in Milford, Mass., in place of E. T. Logee, resigned.

Mineral Belt Construction Co.—At the annual meeting in Boston last week, the following directors were chosen: E. R. Burpee, Bangor, Me.; Woodman S. Eaton, Portland, Me.; J. S. Hildreth, Cambridge, Mass.; George Kempton, Sharon, Mass.; George O. Manchester, Payson, Tucker; Boston; Green B. Raum, Washington. The company is building the Arizona Mineral Belt road.

Missouri Pacific.—The following circular has been issued by General Traffic Manager George Olds: "George W. Lilley having resigned the position of General Freight Agent, the office is abolished. The following changes are hereby announced: L. A. Emerson appointed First Assistant General Freight Agent of this company, with office at St. Louis. Mr. Emerson, in conjunction with S. Phillips, Second Assistant General Freight Agent, will have jurisdiction over all the lines in this system north of Denison and Texarkana, Tex. H. A. Johnson is appointed Commercial Agent, vice L. A. Emerson, assigned to other duties. Mr. Johnson will have immediate charge of all freight and passenger traffic of the lines north of Kansas City, including the Central Branch division, with office at Atchison, Kansas." Mr. Wm. E. Hoyt has been appointed Eastern Passenger Agent. He was formerly with the Chicago & Alton road.

Mobile & Ohio.—At a meeting held in New York, Nov. 22, the debenture-holders selected the following gentlemen to be elected directors by the trustees, who hold all the stock: William H. Hays, Adrian Iselin, Jr., August Belmont, Jr., Alexander H. Stevens, Sidney Shepard, James H. Fay, W. Butler Duncan, Henry Hall, J. P. McMahon, Moses Waring, Peter Hamilton, D. P. Beator, E. L. Russell.

Naugatuck.—In the list of directors chosen, as given last week, the name of W. D. Bishop, Jr., should be substituted for that of G. W. Beach. Mr. Bishop takes the place of the late E. F. Bishop.

New Haven & Derby.—At the annual meeting in New Haven, Conn., Nov. 18, the following directors were chosen: Royal M. Basset, Wm. E. Downes, Birmingham, Conn.; George P. Cowles, F. Farrell, Thomas Wallace, Ansonia, Conn.; Isaac Andrews, Charles Atwater, Charles P. English, H. P. Frost, J. A. Snarry, Noah D. Sperry, John P. Tuttle, Morris F. Tyler, New Haven.

New York, Lake Erie & Western.—Mr. W. J. Murphy has been appointed Superintendent of the Buffalo and Rochester divisions in place of Mr. Charles Neilson, resigned. Mr. Murphy began on the road 22 years ago as a messenger boy and rose gradually to be Superintendent of the Delaware Division, from which he is now transferred. Mr. E. Van Etten, late Chief Dispatcher, succeeds him as Superintendent of the Delaware Division.

At the annual meeting in New York, Nov. 25, the following directors were chosen: Henry H. Cook, Wm. B. Dinsmore, James J. Goodwin, George M. Groves, Wm. N. Gilchrist, Jacob Hays, John King, Wm. Libbey, J. G. McCullough, Ogden Mills, George W. Quintard, James A. Raynor, Wm. L. Strong, Wm. A. Wheelock, Wm. Whitwright, New York; Cortland Parker, Newark, N. J.; J. Lowber Welsh, Philadelphia. Messrs. Goodwin, King, Mills, Strong, Wheelock, Parker and Welsh are re-elected, but of these Messrs. King, Mills and Wheelock have been in the board but a few weeks.

The board elected John King President; Edwin S. Bowen, Vice-President; A. R. Macdonough, Secretary; Charles G. Lincoln, Treasurer; Messrs. King, McCullough, Cook, Parker and Welsh, Executive Committee; Messrs. King, Wheelock, Whitwright, Raynor, Strong, Libby and Mills, Finance Committee.

Of the officers Messrs. King, Bowen and Macdonough are re-elected; Mr. Lincoln succeeds Bird W. Spencer. No Vice-President was chosen in place of Mr. George R. Blanchard, who retires from the company's service.

New York, West Shore & Buffalo.—Mr. E. A. Blake is appointed Chief Dispatcher of the Mohawk Division, taking effect Nov. 1. He will have charge of dispatchers, operators and distribution of cars, and will report direct to the Superintendent.

Ohio River.—The following circular is dated Parkersburg, W. Va., Nov. 24:

"Mr. Chas. Howard having resigned as General Superintendent, Mr. C. L. Williams is hereby appointed Assistant Superintendent, and will have charge of the train service. The general officers will report to the Vice-President, Geo. W. Thompson."

Old Colony.—At the annual meeting in Boston, Nov. 25, the following directors were chosen: Samuel C. Cobb, Uriel Crocker, George A. Gardner, Boston; Charles F. Choate, Southboro, Mass.; F. L. Ames, Easton, Mass.; Nathaniel Thayer, Lancaster, Mass.; Thomas J. Borden, John S. Brayton, Fall River, Mass.; Charles J. Lovering, Taunton, Mass.; Wm. J. Rotch, New Bedford, Mass.; John J. Russell, Plymouth, Mass.; Royal M. Turner, Randolph, Mass.; Thomas Dunn, Newport, R. I. The board re-elected Charles F. Choate President; John L. Brayton, Clerk; John M. Washburn, Treasurer; J. R. Kendrick, General Manager.

Pennsylvania Company.—Mr. Thomas Jackson is appointed Road-master of the Western Division, in place of D. L. Slataper, resigned. To take effect Dec. 1. Mr. Jackson is promoted from Division Engineer to his new position.

Pittsburgh Junction.—Mr. Nigel Bruce has been appointed Superintendent of this road, to date from Oct. 1. Address Allegheny, Pa.

Providence, Warren & Bristol.—At the annual meeting in Providence, R. I., Nov. 24, the following directors were elected: T. P. I. Goddard, William R. Robinson, H. A. Whitney, William Goddard, Francis M. Weld and Royal C. Taft. At a meeting of the directors the following officers were elected: President, H. A. Whitney; Treasurer, Benjamin B. Torrey; General Superintendent, A. A. Folsom; Superintendent, Secretary and Engineer, Waterman Stone.

Railway Freight & Passenger Conductors' Mutual Benefit Association.—At the annual convention in Chicago last week this Association elected the following officers: President, E. A. Sadd, Chicago, Burlington & Quincy; First Vice-President, John W. Mallory, Atchison, Topeka & Santa Fe; Second Vice-President, L. B. Muro, Morgan's Louisiana & Texas; Secretary and Treasurer, Charles Huntington; Board of Directors—John R. Landy, Chicago & Northwestern; Frank X. Vevia, Pittsburgh, Fort Wayne & Chicago; Harry S. Gray, Chicago & Alton; John R. Wheldon, Lake Shore & Michigan Southern; Dan Cameara, Wabash, St. Louis & Pacific; C. A. Loomis, Michigan Central. John Laughlin was elected to deliver the next annual address, with John W. Mallory as alternate.

Richmond, Fredericksburg & Potomac.—At the annual meeting in Richmond, Va., last week, the following were elected: President, J. P. Brinton; directors, A. S. Biddle, John S. Blackburn, Charles Chauncey, F. T. Willis. The state director is Dr. L. B. Anderson.

Richmond & Petersburg.—At the annual meeting in Richmond, Va., Nov. 25, the following were elected: President, Frederick R. Scott; directors, R. R. Bridgers, H. K. Ellyson, B. W. Hazall, D. W. Lassiter, W. T. Walters.

South Pacific Coast.—Mr. W. T. Fitzgerald is appointed Assistant General Freight and Passenger Agent of this company, taking effect Nov. 1. His office is in San Francisco.

Union Pacific.—The following order from General Manager, S. R. Callaway, is dated Omaha, Neb., Nov. 15: "Dr. Oscar J. Pfeiffer is appointed Chief Surgeon of the Company, vice Dr. S. D. Mercer, resigned. Dr. Pfeiffer's headquarters will be at Denver, Col. All accounts for services or supplies in connection with the Medical Department will be sent to Dr. Pfeiffer, at Denver."

Valley of Virginia.—This company recently elected the following officers: President, S. Spencer; Directors, J. J. Allen, W. A. Anderson, R. W. Burke, Henry Duval, Osmun Latrobe, Deratur H. Miller; Secretary and Treasurer Wm. H. Ijams. The company is controlled by the Baltimore and Ohio.

Watertown & Waterbury.—At the annual meeting in Bridgeport, Conn., the following officers were elected: President, W. D. Bishop, of Bridgeport; Secretary and Treasurer, L. W. Cutler, of Watertown.

West Virginia Central & Pittsburgh.—Mr. E. W. S. Moore has been chosen Secretary in place of A. E. Ebert, resigned. The general offices of the company are to be removed from New York to Baltimore.

PERSONAL.

—Mr. Charles Howard has resigned his position as Superintendent of the Ohio River Railroad.

—Mr. E. T. Lozeu has resigned his position as Superintendent of the Milford & Woonsocket road.

—Mr. Austin L. Hartwell, Car Accountant of the Illinois Midland road, died at Decatur, Ill., Nov. 14 last.

—Mr. E. D. True has resigned his position as General Freight Agent of the Houston & Texas Central road.

—Mr. D. L. Slataper has resigned his position as Road master of the Western Division of the Pittsburgh, Fort Wayne & Chicago road.

—Mr. Charles G. Barber, for some time past Assistant to the President of the New York, Lake Erie & Western Co., has resigned that position.

—Mr. S. S. Stevens, who has been General Agent of the Chicago, Rock Island & Pacific road at Council Bluffs ever since the road was completed to that point, has resigned on account of ill-health.

—It is stated that Mr. J. H. Setchel, General Master Mechanic of the Ohio & Mississippi road, was recently offered the position of Superintendent of the Brooks Locomotive Works. He has, however, declined the offer, preferring to remain on the road.

—Mr. Daniel Torrance, who died in New York Nov. 18, was formerly a director and Vice-President of the New York Central, and afterwards President of the Ohio & Mississippi. For some years past he has not been actively engaged in business. He was a son-in-law of the late Commodore Vanderbilt, and was engaged in many of his enterprises.

—The annual report of the directors of the Boston & Providence Co. says: "It is with great pleasure that an acknowledgment is made of the forethought, skill and integrity of two of the most valuable servants of the corporation, Messrs. George Richards, its Master Mechanic, and George F. Folsom, its Master Carpenter and Superintendent of bridges. Their respective services of 35 and 33 years have been replete with faithful and intelligent duty."

—Mr. Frederick Wooten died Nov. 16 in Reading, Pa., of Bright's disease, aged 26 years. Mr. Wooten was a son of General Manager Wooten of the Philadelphia & Reading road. He graduated from the Lehigh University at Bethlehem and afterwards took a practical course in the Pennsylvania Railroad shops at Altoona. At the time of his death he was Road Foreman of engines on the Pittsburgh Division of the Pennsylvania Railroad. Mr. Wooten was a young man of much promise, and was on the direct line of promotion on the Pennsylvania Railroad.

—Mr. Charles Neilson, who has resigned his position as Superintendent of the Buffalo & Rochester Divisions of the New York, Lake Erie & Western road to accept the position of Assistant to the President of the Lafin & Rand Powder Co., commenced his railroad career 16 years ago as brakeman on a gravel train on the Northern Pacific Railroad. After serving on that road and others he came to the Erie 11 years ago and was rapidly advanced to the position of Division Superintendent. Mr. Neilson is a strict disciplinarian and an exceedingly active and energetic officer, and had instituted many reforms and much improvement in the discipline of his division.

—Col. Isaac S. Buckelew, Superintendent of the Amboy Division of the Pennsylvania Railroad, died Nov. 23, of typhoid fever, at his winter residence, Camden, N. J. The deceased was born Sept. 21, 1830. At an early age he commenced the study of civil engineering and soon acquired a knowledge of the profession. In 1849 he was made Assistant Engineer of the Camden & Amboy Railroad, a position he held until 1854. He was Secretary, Treasurer and Superintendent of the Jamesburg & Freehold Agricultural Railroad for several years and in 1872 was made Superintendent of the Amboy Division of the Pennsylvania Railroad, a position he held until his death. He was also President of the Jamesburg & Freehold Co. He was a director of the Camden & Burlington County, the Philadelphia & Long Branch, the Camden & Philadelphia Ferry and was for many years a director of the New Jersey Agricultural Society. He was also President of the Jamesburg National Bank, a trustee of the Jamesburg Presbyterian Church, and served a term as trustee of the State Reform School at Jamesburg. Col. Buckelew was one of the best known men in South Jersey. There was not a station on his line that he did not know well, and hardly a resident on the line whom he could not recognize when he met him.

—Mr. Daniel S. Wells died in Milwaukee, Wis., Nov. 24, after a long illness. His death has been expected almost daily for several months. For a number of years past Mr. Wells has been suffering from valvular disease of the heart, which necessitated his retirement from active business, and finally became complicated with other ailments and caused his death. Mr. Wells was born in Middlebury, Vt., July 22, 1821. Mr. Wells was engaged in railroad construction all his life, beginning in 1849 with T. T. Strong, the contractor for building the Eastern Division of the Rutland & Burlington Railroad. He was also interested in the building of the Rutland & Washington Railroad and some Canadian roads. Thence he went to Cincinnati, where he did work on the Ohio & Mississippi Railroad. In 1856 he became associated with Selah Chamberlain in constructing the old La Crosse & Milwaukee Railroad from Minnesota Junction to La Crosse. In 1859 the firm of Wells & French constructed the Chicago & Northwestern Railway from Janesville to Fort Howard. The firm was steadily engaged in railroad construction in the states of Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, and Michigan until 1880, when, by

the death of Mr. French, the firm was dissolved. Messrs. Wells, Harrison & Shute, and on the death of Mr. Shute Messrs. Wells, Harrison & Greene have continued an active career as railroad contractors and builders. About 1862 Mr. Wells became the junior partner of the firm of Chapin & Wells, bridge and car builders of Chicago. Mr. Chapin, having disposed of his interest to Wells & French, the firm was succeeded by the Wells & French Manufacturing Co., which became and still is one of the largest bridge and car building concerns in the West. He retired from active business about five years ago. In 1852, at Granville, N.Y., Mr. Wells married Miss Helena M. Lee. His widow and two daughters, Alice M. and Katharine Lee Wells, survive him. Mr. Wells leaves a fortune amounting to several millions of dollars. It is said that his will will give large sums to benevolent and charitable institutions.

OLD AND NEW ROADS.

Arizona Mineral Belt.—The Mineral Construction & Improvement Co. has been organized in Boston to build this road which is to run from a connection with the Atlantic & Pacific road in Northern Arizona across the timber belt of that territory and by way of Green Valley, Pinal Creek and Salt River to Globe City. From that point it will probably be extended to Benson on the line of the Southern Pacific road. The preliminary survey has been completed and construction is soon to be begun. The directors of the construction company include Mr. Payson Tucker of the Eastern Railroad, Mr. Geo. O. Manchester, and Mr. E. B. Burpee, of the International road.

Atlantic & Pacific.—The Boston Herald says: "The October gross earnings were \$156,600, or say \$160,000 in round numbers, and the interest charges are shown to be now, or in the near future, \$125,000 per month, including interest on the Mojave Division bonds. On that basis it is easy to see that the road could earn but a fraction of its interest after paying operating expenses. But the company has an income above its actual gross earnings in the form of California pool percentages and a rebate from the Atchison and St. Louis & San Francisco roads of 25 per cent. In the California pool the Atlantic & Pacific has 27 per cent. of the receipts, no matter what percentage its own business bears to the whole business. In October its pool receipts were, say, \$35,000 larger than its actual contribution to the pool earnings. In the same month the rebates from the Atchison road were some \$50,000, and from the St. Louis & San Francisco some \$10,000, thus adding \$95,000 of net receipts to whatever surplus above operating expenses there may have been in the \$160,000 gross earnings mentioned above. It is not known what the percentage of operating expenses to gross earnings may be, but, even were it 80 per cent., the \$32,000 net from actual earnings and \$95,000 from the pool and rebates would more than pay \$125,000 of interest charges. Had not the company some \$600,000 or \$700,000 floating debt outside its secured obligations to the Atchison and St. Louis & San Francisco companies, the management would expect the road to become self-sustaining by Jan. 1, 1895. As it is, the expectation is expressed that it will need no outside help after July 1, 1895, at the farthest. The company's pool receipts may be greater or less, but its rebates will increase as its business increases."

Baltimore & Ohio.—In the United States Circuit Court in Baltimore, Nov. 20, Judges Bond and Morris rendered a decision in the case of the Baltimore & Ohio Railroad Co. and the Baltimore & Ohio Express Co. against the Adams Express Co., which was brought to require the defendant to advance accrued charges upon express matter received by it from the Baltimore & Ohio Express, or tendered to it for the Baltimore & Ohio Express Co. The Court requires the bill to be amended by dismissing the Baltimore & Ohio Express Co., of Ohio, as one of the complainants. The Court is of opinion that the suit must be brought, not against the Adams Express Co., but against Mr. Dinsmore, as President of the Adams Express Co., that being the requirement of the New York law. It refuses to grant the injunction requiring the Adams Express Co. to advance the charge of the Baltimore & Ohio Express Co. on packages tendered to it, but says that, upon the bill being amended, it will grant an injunction requiring the Adams Express Co. to receive matter tendered by the Baltimore & Ohio Express, to account for the charges when collected and that it will by injunction require the Adams Express Co. to receive from shippers express matter destined for the Baltimore & Ohio Express, without requiring prepayment from the shippers, provided the Baltimore & Ohio Express agrees to pay the charges of the Adams Express Co. on such express matter when tendered to it.

Boston & Maine and the Eastern.—The directors of the Boston & Maine and the Eastern companies have revised the lease so as to avoid the objections recently raised by the courts, and the new draft will be submitted to the stockholders of both companies for approval at the meeting to be held Dec. 2 next. Under the amended lease all the property of the Eastern Railroad is to be leased to the Boston & Maine for 54 years, dating from Oct. 1, 1883, subject to all the legal obligations. The combined earnings of the two roads are to be applied: 1. To pay the working expenses of both roads and the organization expenses of the Eastern Co. 2. The rental of all railroads leased to both companies and interest on the permanent debt of both. 3. After making these payments and from the surplus remaining, the Boston & Maine Co. shall retain to its own use \$630,000 yearly. 4. From the surplus then remaining \$100,000 shall be then paid to the Eastern Co. 5. Should any surplus remain, the lessee shall retain from it \$70,000, and shall pay any surplus over that amount to the Eastern Co., provided such surplus does not exceed \$336,000. Any surplus then remaining shall be retained by the lessee, but shall be applied to permanent improvements.

The lease further provides that the lessee shall have authority to make such permanent improvements as business may require and in payment therefor may issue improvement bonds. The lease carefully defines permanent improvements, limiting them strictly to additions to property. It provides, however, that improvement bonds may be issued to meet the principal of the car trusts and wharf loan of the Eastern Co., when due. The lessee is to assume all the leases and contracts of the Eastern and is to have the right to vote on the stock of any other railroads owned by the Eastern Co. A special provision is made that the traffic contract with the Maine Central Co. shall not be changed without the assent of the directors of all the three companies and of three-fourths of the stock of the Maine Central. New branches may be built or roads bought or leased, but in such case the consent of the directors and stockholders of both the lessee and lessor companies will be necessary. The remaining provisions are substantially the same as the former lease and refer to matters of detail. It differs mainly from the former lease in providing for the Eastern Co.'s sinking fund of \$100,000 yearly, thus meeting the objections raised in the courts.

Six of the nine directors of the Boston & Maine Co. issued a circular urging upon the stockholders the approval of this lease and setting forth the reasons for such action. On the

other hand, Mr. John Felt Osgood, one of the directors of the company, has issued a long circular arguing against the lease and urging the stockholders to vote against it. The original lease was approved by a very nearly unanimous vote, and the probability is that there has been no great change of opinion since that time, and that the present lease will be approved by a large majority of the stockholders.

Boston & Providence.—At the annual meeting last week President Whitney called attention to an item of curious interest in the report, which is as follows:

"The directors in their report of 1845, 39 years ago, stated: 'The renewal of rails will never be a serious item of expense, only 2½ per cent. of the whole number having been renewed during 10 years!' Since then the road has been double-tracked with iron; nine miles of third track and 40 miles of sidings have been laid. The iron, which had an average weight of 56 pounds to the yard, has disappeared, and the entire road is equipped with steel rails, weighing 58 pounds to the yard. New rails shortly to be delivered will weigh 69 pounds to the yard."

Burlington, Cedar Rapids & Northern.—Tracklaying has been completed on the long existing gap of 48 miles between Elmira, Ia., and Noel, on the Clinton Division, and that branch is now completed from the Mississippi River at Clinton westward to the main line of the road at Elmira, a distance of 72 miles. This gives the company a new connection with Chicago by way of Clinton, which for a large part of the road makes a shorter line than the present connection by way of Burlington.

Cahaba Coal-fields.—Contracts have been let for the construction of this road which is to run from the Georgia Pacific Railroad, near Birmingham, Ala., to the coal mines recently opened in the Cahaba coal-fields, a distance of 15 miles. The mines are owned by Mr. H. F. Debardeleben, one of the largest coal operators in Alabama, who will construct the railroad.

Central of New Jersey.—The proceedings in the Dinsmore suit to set aside the lease of this road to the Reading Co. were varied on Nov. 24, when the plaintiff made application to the United States Circuit Court for an order restraining the Central Co. from issuing any stock or bonds to the Reading on account of improvements made under the lease. After the arguments had begun on this motion, the case was put over to Dec. 2, without a decision, counsel for the Reading undertaking that in the meantime no attempt should be made to issue the securities.

As noted elsewhere, it is now certain that the lessee will not pay the dividend due on this company's stock Dec. 1. It is probable that a meeting of stockholders will be called to consider what should be done.

It is still stated that large purchases of the stock have been and continue to be made for the Baltimore & Ohio Co. These are evidently made in the expectation that the lease will be broken, when a controlling interest in the road will be very valuable to the Baltimore & Ohio.

Central Pacific.—This company's statement for September and the nine months ending Sept. 30 is as follows:

	September, 1884.	1883.	1884.	1883.
Earnings.....	\$2,104,993	\$2,426,548	\$16,580,496	\$16,275,232
Expenses.....	1,355,485	1,376,346	11,824,981	11,631,125
Net earnings..	\$839,508	\$1,050,202	\$4,755,515	\$6,644,107
Per cent. of exps.	61.8	56.7	71.3	63.6

The gross earnings for the nine months show a decrease of \$1,694,736, or 9.3 per cent., and the expenses an increase of \$193,856, or 1.7 per cent.; the result being a decrease of \$1,888,592, or 28.4 per cent., in net earnings.

Chicago, Freeport & St. Paul.—This company, which has begun work on the construction of a line up the east side of the Mississippi from Freeport, Ill., to St. Paul, has executed a mortgage to the American Loan & Trust Co., of New York, to secure a proposed issue of \$10,000,000 in 6 per cent. bonds.

Chicago & Northwestern.—At a meeting of the board in New York, Nov. 24, it was resolved to declare the usual quarterly dividend of 2 per cent. on the preferred stock and the half-yearly dividend of 3½ per cent. on the common stock. No financial report was made public with the dividends, but Vice-President Sykes made the following verbal statement:

"The dividends have been fully earned from the five months' business up to Nov. 1. The company has made a very satisfactory showing for the five months. The directors consider it only a matter of justice, prudence and fairness to withhold five months' statement from the public. It is better than we had expected it to be. The reduction in operating expenses is over \$800,000, compared with last year. I am not at liberty to give any other figures. The company has the money in the treasury to pay the dividends, and has besides a comfortable surplus."

Cincinnati, Indianapolis, St. Louis & Chicago.—This company's statement for September and the three months of the fiscal year from July 1 to Sept. 30 gives the following figures:

	September, 1884.	1883.	Three months, 1884.	1883.
Earnings.....	\$250,988	\$249,886	\$704,619	\$686,525
Expenses.....	149,202	143,126	432,674	410,189
Net earnings..	\$101,786	\$106,760	\$271,945	\$276,336
Fixed charges..	50,000	50,083	150,000	150,249
Surplus.....	\$51,786	\$56,677	\$121,945	\$126,087

For the three months this shows an increase of \$18,004, or 2.6 per cent., in gross earnings; an increase of \$28,485, or 5.5 per cent., in expenses; a decrease of \$4,391, or 1.6 per cent. in net earnings, and of \$4,142, or 3.3 per cent., in surplus.

The earnings above shown are from transportation only. Earnings derived from grain elevator, coal elevator rents, and other miscellaneous sources, are credited at the end of each six months direct to profit and loss account.

Cleveland, Columbus, Cincinnati & Indianapolis.—The following statement for the eight months ending Aug. 31 is published in London:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings.....	\$2,447,422	\$2,813,418	D.	\$365,996 13.0
Expenses.....	1,859,737	1,982,557	D.	122,820 6.2
Net earnings..	\$587,685	\$830,861	D.	\$243,176 29.3
Interest, etc.....	515,892	451,831	I.	64,061 19.5
Surplus.....	\$71,793	\$399,030	D.	\$327,237 82.1

Expenditures for additions to property this year were \$186,171, being \$114,378 in excess of the surplus for the eight months.

Crawford Junction & McKean County.—This company has been organized to build a railroad from Crawford Junction in McKean County, Pa., to Johnsonburg, in Elk Co., a distance of 30 miles. It is intended to develop a coal-mining section. Separate companies with the same management have also been organized to build branches from Brockwayville to Dagsabonda, 13 miles, and from Dagsabonda Junction to the coal-mines, 7 miles distant.

The road, apparently, is intended to develop the Erie bituminous coal properties.

Delaware & Bound Brook.—The East Trenton branch of this road has been completed and is ready for operation. The branch is 3 miles long, is used for freight purposes entirely, and runs around the city of Trenton, N. J., connecting the road with the potteries, brick yards and other manufacturing establishments in that place. The road is leased to the Philadelphia & Reading.

Eastern & Western Air Line.—This company has filed articles of incorporation and consolidation in Indiana. The projected line is from a point in Western Pennsylvania to Council Bluffs, Ia., with branches to Chicago, Cincinnati and St. Louis.

East Tennessee, Virginia & Georgia.—The earnings of this road for October and the four months of the fiscal year from July 1 to Oct. 31 were:

	October.	1883.	Four months.	1883.
Earnings.....	\$412,889	\$435,592	\$1,372,360	\$1,524,374
Expenses.....	211,384	219,116	797,396	767,523
Net earnings.....	\$200,905	\$236,476	\$574,964	\$756,851
Per cent. of exps....	51.3	48.1	58.1	50.4

For the four months there was a decrease in gross earnings of \$152,014, or 9.9 per cent., and an increase in expenses of \$29,873, or 3.9 per cent., the result being a decrease of \$181,887, or 24.0 per cent., in net earnings.

Fitchburg.—Work has been begun on the extension of the Watertown Branch from the present station in Waltham, Mass., about a mile further west to a point known as Robert's Crossing. Grading will be done this fall, but the track will not be laid before spring. A new station will be built at the new terminus, and the engine-house will be removed there from its present location.

Greenville & Laurens.—The Greenville (S. C.) *News* of recent date says: "The contractors on the Greenville & Laurens road have now entirely completed the grading, and the road has been turned over to the company. The contractors have discharged all their hands and sold out a large portion of their stock and material. It is understood that a meeting of the directors of the company will be called at an early day. As has already been stated, President Mauldin is confident that the road can be ironed by next spring."

Independence & Verdigris.—This company has filed articles of incorporation to build a railroad from Independence, Kan., to Emporia, with branches to Chanute and Burlington. The total length of road projected is about 260 miles.

Indianapolis Union.—By agreement of the companies interested in this road, all the freight switching in and about Indianapolis will hereafter be done by the Union Co.'s engines, thus relieving the other companies from the necessity of keeping their own shifting engines. The cost is to be divided *pro rata* on a wheeling basis. The switching transfers in Indianapolis last month amounted to 40,578 cars, a very considerable business.

Kansas City & Southern.—The track is reported laid on this road to Osceola, Mo., 16 miles southward from the late terminus at Brownington, and 30 miles from the northern terminus at Clinton. Work is being pushed as rapidly as possible on the extension of the road southward.

Lake Erie & Western.—Work has been begun on the extension of this road from its present terminus at Bloomington, Ill., to Peoria, a distance of 45 miles. Most of the work on this line will be light. It is stated that the company has received offers for very favorable traffic agreements when the line is completed to Peoria.

Lake Shore & Michigan Southern.—A dispatch from Cleveland, O., Nov. 24, says: "The suit brought by Scofield, Thurmer & Teagle against the Lake Shore Railroad for \$10,000 damages for discriminating against them in freight rates and shipments, was begun to-day before Judge McKinney. The suit is a direct blow at the Standard Oil Co. The plaintiffs, who are one of the largest independent refiners in the country, claim that their business is being gradually broken up by a conspiracy between the Lake Shore officials and the Standard Oil Co., by which the latter are given lower freight rates. The Standard Co. pay full rates, it is charged, but the Lake Shore officials allow and pay back to the Standard a rebate of 10 cents per barrel on all its shipments of oil over their roads, branches and connections. It is also declared that large quantities of the oil shipped by the Standard is shipped in bulk in tank cars, furnished by the Standard, on all of which oil a rebate is given. The plaintiffs offered to furnish these tank cars if they were granted the same rates as the Standard, but this the Lake Shore road refused to do.

"The Lake Shore officials, in their defense, claim that they had a perfect right to make the contract with the Standard, which discriminates against Scofield, Thurmer & Teagle, because of a compact entered into in 1875, whereby the Standard Oil Co. agreed to give defendant the carrying of all the oil it had occasion to ship to Western markets, and further agreed that its shipments over the road each year equal or exceed their shipments of the preceding year, in consideration of which the defendant agreed to carry oil for the Standard Oil Co. for 10 cents per barrel less than their tariff rates. The quantity thus shipped by the Standard Oil Co. was 90 per cent. of all oil shipments out of Cleveland."

Louisville & Nashville.—A report has been in circulation this week that a general reduction of 10 per cent. in the wages of the employees on this road was to be made. Officers of the company deny the report, or say at any rate that nothing has been decided on as yet.

Manhattan.—This company's statement for the quarter ending Sept. 30, is as follows:

Gross earnings.....	\$1,529,734
Expenses.....	888,245
Net earnings.....	\$641,489
Other income.....	20,515
Total.....	\$662,004
Interest and other charges.....	368,143
Surplus.....	\$293,861

Taxes in litigation are not included. The surplus was equivalent to 1.13 per cent. on the stock.

Memphis & Charleston.—This company's statement for September and the three months of the fiscal year, from July 1 to Sept. 30, is as follows:

	September.	1883.	Three months.	1883.
Earnings.....	\$110,384	\$101,382	\$330,518	\$291,434
Expenses.....	82,136	66,097	236,253	201,596
Net earnings.....	\$28,248	\$35,285	\$104,265	\$89,838
Per cent. of exps....	74.6	65.4	68.4	69.3

For the three months the gross earnings show an increase

of \$39,084, or 13.4 per cent., and the expenses an increase of \$24,657, or 12.2 per cent., the result being a gain of \$14,427, or 16.1 per cent., in net earnings.

Minneapolis, Sault Ste. Marie & Atlantic.—Time-table No. 1 of this road shows one train daily each way running between Turtle Lake, Wis., and Bruce. The stations on the road, with the distances from Turtle Lake, are: Scott's Siding, 5.5; Barron, 15.4; Cameron Junction, 20.5; Canton, 25; Hawkins, 31; Weyerhaeuser, 38.5; Tibbett's Siding, 42; Bruce, 45.7 miles. At Turtle Lake the road connects with the North Wisconsin Division of the Chicago, St. Paul, Minneapolis & Omaha; at Cameron Junction with the Superior Branch of the same road, and at Weyerhaeuser with the Chippewa River & Menominee road.

Missouri Pacific.—In accordance with the terms of the agreement growing out of the suit of Jackson County, Mo., against this company, the old track between Kansas City and Independence, which was torn up some time ago, is to be rebuilt. Work is now in progress on the laying of the track and it is expected to be put in operation early in December. The line is parallel to the Missouri Pacific's main line and the road was accordingly abandoned soon after it came into the control of that company, but suit was brought by Jackson County, which had subscribed a considerable amount for the construction of the line, and was decided in favor of the county by the courts.

Nashville, Chattanooga & St. Louis.—This company's statement for October and the four months of the fiscal year from July 1 to Oct. 31 is as follows:

	October.	1883.	Four months.	1883.
Earnings.....	\$203,737	\$201,320	\$819,987	\$811,345
Expenses.....	123,374	109,236	462,464	419,255
Net earnings.....	\$80,363	\$92,084	\$357,523	\$391,990
Interest and taxes.....	228,818	220,983		
Surplus.....			\$128,705	\$171,007

The four months show an increase in gross earnings of \$8,742, or 1.1 per cent.; a decrease in net earnings of \$34,467, or 8.8 per cent., and a decrease of \$42,302, or 24.7 per cent., in the surplus.

New Haven & Derby.—At the recent annual meeting at New Haven, Edward N. Shelton, of Birmingham, explained the proposed connection of the road with the New England at Sandy Hook. The line, he said, lay in the Housatonic Valley, and would require only 14 or 15 miles of construction, which was but a little further than if a direct line were put through to Danbury. The connection with the West would give greater facilities not only to the city of New Haven, but to all intermediate points along the line. Coal could be brought to New Haven much cheaper than by the present method. Mayor Lewis also endorsed the plan. By a unanimous vote the President, Secretary and Treasurer were appointed to negotiate with the city of New Haven for a settlement of financial relations.

New York, Lake Erie & Western.—As expected, the annual meeting of this company on Tuesday of this week resulted in a complete change of management, only four of the members of the old board remaining. The Executive and Finance committees are entirely new. Mr. King remains as President, in accordance with the previous understanding. In fact, the only change made in the board of officers is the retirement of Mr. Blanchard from the vice-presidency and the election of Mr. C. G. Lincoln in place of Col. Spencer as Treasurer. The election was notable as being the first one since the reorganization of the company at which the voting trustees have not controlled one-half the stock, in accordance with the terms of the reorganization, the common stock having been returned by those trustees to the holders during the past year. Mr. King voted on proxies representing \$23,000,000 of stock and bonds, the English interest. Mr. J. G. McCullough of New York voted on \$38,000,000, and several other large blocks were voted.

President King said after the close of the meeting that there would be no wholesale change in the officers. The policy of the new board would be reform and retrenchment, on account of the necessities of the company, and there would probably be some reduction in the force in the general offices and also in the salaries, but no considerable change would be made in the passenger train service and all the reforms and changes would be made gradually.

Norfolk & Western.—The extension of this road from its terminus in Norfolk, Va., to the new wharves at Lambert's Point, a distance of about three miles, is completed. A large coal wharf is nearly completed at the new freight terminus and shipments from it will begin by Jan. 1. Other wharves are in progress.

Northern Pacific.—At a meeting of the board held in Philadelphia, Nov. 21, the directors finally decided to locate the Cascade Division by way of the Stampede Pass, as recommended by Chief Engineer Anderson. Three routes had been surveyed—that by the Stampede Pass and by the Natchez and Snoqualmie passes; but the board had delayed its final decision. It was ordered that the whole middle section of the Cascade Division be put under contract, the road to be finished within a year. The grading of the eastern section is nearly completed to the mountains, and part of that of the western section is well advanced.

The work of construction on the Wisconsin Division is well advanced. Tracklaying is now in progress and it is expected that the road will reach Ashland, Wis., about the end of the year, and will be opened for traffic immediately afterward, so that very early next year connection will be made with the Milwaukee, Lake Shore & Western road, giving the company a new line eastward.

Ohio & Mississippi.—The Cincinnati *Times-Star* of Nov. 19 says: "After the recent election of the directory *quo warranto* papers were served upon the newly elected directors in the United States Court. The writs, however, were not returnable until Nov. 19, which happens to be to-day."

"It was due to this that Messrs. Higgins, Tracey and Sloan, of the London ticket, left on the same evening for Baltimore. To-day the writs are returnable, but neither of the gentlemen have come here for the purpose, nor is the President, Captain W. W. Peabody, of that company, at home, having left yesterday."

"It seems that the whole matter has been quietly dropped, and that no trouble whatsoever will ensue from the last election of directors and officers. In the United States Court nothing at all is known about the *quo warranto* papers and the writs."

Old Colony.—At the annual meeting in Boston, Nov. 25, the stockholders voted to authorize the issue of bonds to the amount of \$500,000 to be used for the purpose of extending the second track. They also voted to authorize the building of a branch to connect the Shawmut and Granite branches of the road.

Oregon Railway & Navigation Co.—The track on the Baker City Branch, which was completed to Huntington, Oreg., about two weeks ago, was formally connected

with the Oregon Short Line Division of the Union Pacific Nov. 25, the last spike being driven in the presence of a number of the officers of both companies.

Philadelphia & Reading.—The Receivers have made arrangements with Messrs. Drexel & Co. to purchase the coupon and registered interest due Dec. 1 on the consolidated mortgage bonds. A similar arrangement was made in June last, and the advance then made by Drexel & Co. has since been repaid by the Receivers and the coupons cancelled. The amount of the interest due in December on these bonds is \$617,575.

The petition presented to the United States Circuit Court on behalf of the company last week, asking for an order to direct the Receivers to pay the New Jersey Central dividend due Dec. 1 was not granted, as the Court thought that it would be better to await further proceedings and pass decision in the Dinsmore suit and therefore postponed all action. It is now certain that the company will not pay the dividend, the Receivers being unable to raise money. Whether any proposition will be made for the payment of a dividend reduced in amount is uncertain. Probably none will be at present.

President Kern on Nov. 25 addressed a long letter to President Little, of the New Jersey Central, giving the reasons for withholding the payment of the dividend. They are that the Receivers have stated that the earnings of the Central are not sufficient to pay it and they are advised by the mortgage creditors that proceedings may be instituted by some of the bondholders to restrain the payment of unearned rentals in preference to interest on the bonds. The letter further represents that the Reading Co. had paid on account of the Central about \$1,450,000 for permanent improvements of road and for floating debt, in excess of the amount received either in securities of the Central or in cash assets transferred at the time of the lease. The lessee claims that if these payments are not allowed on capital account and reimbursed by the use of stock or bonds, they should be taken on the rental account, and, if this view is taken of the case, the rental of the Central Railroad has already been largely overpaid, and that company has no claim upon the lessee. Whether this plea is in accordance with the terms of the lease or would be accepted by a court is uncertain, but it is obvious that it will be urged in case any attempt is made to break the lease on account of the non-payment of the dividend.

Pine Bluff & Swan Lake.—This company has amended its charter to provide for an extension of the road to St. Charles, Ark., and to increase the capital stock to \$350,000.

Pittsburgh, Cleveland & Toledo.—An agreement has been filed under which the Baltimore & Ohio Co. indorses the bonds of this company, and in consideration thereof the Pittsburgh & Western Co., as lessees of the Pittsburgh, Cleveland & Toledo road, agrees to pay the sum of \$12,000 monthly to the Central Trust Co., of New York, to meet the interest on the \$2,400,000 of indorsed bonds. In default of payment the lease of the Pittsburgh, Cleveland & Toledo road will be forfeited to the Baltimore & Ohio.

Raleigh & Gaston.—This company has about completed a branch line from its road near Warrenton Station southward to the town of Warrenton, N. C., a distance of three miles. The branch will be shortly put in operation.

Rochester & Pittsburgh.—Mr. Walton H. Brown, President of this company, has issued a circular to the stockholders, asking them to come forward and subscribe for their proportionate share of the stock of the new company, under the recently adopted plan of reorganization. The amount of new stock offered for subscription is \$5,000,000 of preferred and \$5,000,000 of common. This is offered in blocks, consisting of one share of preferred and one share of common stock, for \$60 a block. Mr. Brown makes the following explanation: "A person who holds 100 shares of stock in the present company will receive 25 shares of the new common stock without assessment. Then he will be entitled to subscribe for 25 blocks, each block comprising one share of the new preferred and one share of new common stock. This will give him 50 shares of common stock out of \$10,000,000, which represents the same interest in the property as 100 shares did out of a capital of \$20,000,000. Besides this he will be the owner of 25 shares of preferred stock, costing him 60 per cent." The amount already subscribed to the new stock, it is stated, exceeds three-fifths of the amount required to carry the plan into effect.

Rogers, Siloam & Muskogee.—This company has filed articles of incorporation to build a railroad from Rogers, Ark., to the state line in Benton County, a distance of 25 miles.

Texas & Pacific.—The report of the bondholders' committee, embodying the arrangement agreed upon at the recent conference, covers the following points: The interest on the consolidated bonds is to be paid in cash; the terminal bonds to be used as collateral for money borrowed; arbitration by railway experts to examine into the question of rates with connecting lines, and, if inequitable, adjust them; Rio Grande Division and New Orleans Pacific coupons to be funded one at a time as needed, under the present scheme, on the basis of one-half cash and one-half in terminal bonds; coupons of consolidated bonds not to be canceled, but to be held in trust to protect the company against suits of income and land grant bondholders; the following directors to be elected in March: Samuel G. Thompson, George F. Tyler, J. P. Scott, Charles O. Baird, John C. Bullitt, Isaac J. Wistar, J. N. Hutchinson, William Winsor, by the bondholders' committee; Jay Gould, R. S. Hayes, Russell Sage, Thomas T. Eckert, George J. Gould, Frederick L. Ames, A. L. Hopkins, and John C. Brown, by Mr. Gould; as the 17th director, Mr. George B. Roberts has consented to serve.

Union Pacific.—The following order was issued by General Manager Callaway, dated Omaha, Neb., Nov. 15: "Commencing Dec. 1, the hospital assessment will be reduced to 25 cents per month. Employees desiring information regarding the expenditures or management of the Medical Department can have it furnished upon making application to Dr. Oscar J. Pfeiffer, Chief Surgeon, Denver."

Vicksburg, Shreveport & Pacific.—A contract has been let to Rogers & James, of Vicksburg, Miss., to raise the grade of the older part of the road, from Delta, La., to Monroe, 73 miles. This section was built originally about on the level of the country, and it is covered with water nearly every year, interrupting all traffic.

Wabash, St. Louis & Pacific.—The special master has reported to the Court in favor of granting the petition of the Receivers to make the interest on the Receiver's certificates payable semi-annually instead of yearly, as at first provided in the order. The master also filed a report in favor of permitting the Receivers to pay the remaining indebtedness incurred for equipment, which amounts to about \$112,000.

Wheeling & Lake Erie.—The Receiver has completed a branch or extension from the present terminus at Valley Junction, O., southeast to Sherrrodsburg, 10 miles. It reaches a number of coal mines.